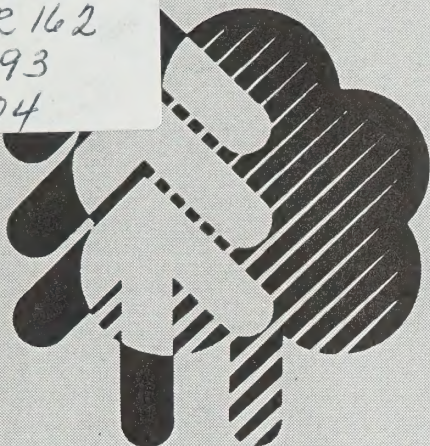


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Vegetation Management
Alternatives Program


Public Attitudes Towards Herbicides and their Implications for a Public Involvement Strategy for the Vegetation Management Alternatives Program



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**Public Attitudes Towards Herbicides and their Implications
for a Public Involvement Strategy for the
Vegetation Management Alternatives Program**

**VMAP Technical Report 93-04
March 1993**

Prepared by:

Burt Perrin, *Burt Perrin Associates*
Kate Wiele and Lynn Iles, *Lifetime Consulting Services*

Prepared for:

Dr. Robert Wagner and Lisa Buse
Vegetation Management Alternatives Program
Ontario Forest Research Institute
Ontario Ministry of Natural Resources

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Ministry of Natural Resources
Ontario Forest Research Institute
P.O. Box 969, 1235 Queen St. E.
Sault Ste. Marie, Ontario
P6A 5N5

Telephone: (705) 946-2981
Fax: (705) 946-2030



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EXECUTIVE SUMMARY

Introduction

Background

The Vegetation Management Alternatives Program (VMAP) is one component of the new sustainable forestry initiative within the Ontario Ministry of Natural Resources (OMNR). The goal of VMAP is to gradually reduce dependence on herbicides in Ontario's forests by developing alternatives and a better understanding of forest ecosystems through research, education, and field delivery.

One of VMAP's major components is public education. Education is intended to involve active participation and dialogue with all who have a stake in forest management, rather than just one-way communications. A major component of the public education program involves interaction with stakeholder groups (e.g., environmental and outdoor organizations), as well as establishing a dialogue among forest managers, researchers, and interest groups.

Public attitudes are expected to play a major role in shaping the priorities of the research program, as well as of field delivery. Thus public education, involving ongoing assessment of public sentiment as well as educational activities, is a critical component of VMAP.

Purpose of Study

The primary purpose of this study was to provide direction for the development of the VMAP Education Program. The first two parts of the study, as listed below, involved research to identify current public views and attitudes regarding vegetation management and herbicide use in forestry, as well as experiences and practices in other jurisdictions regarding public education and involvement.

The primary outcome of this study is a recommended public involvement strategy for VMAP. In addition, this report also identifies related implications for:

- VMAP's overall strategic direction;
- The VMAP research program;
- Vegetation management practices in Ontario;
- Broader forest management considerations;
- Training of foresters in interacting with the public.

Methods

Component A of this study consisted of a comprehensive literature review and interviews with key informants. The purpose of this was to identify what is known about public attitudes and beliefs regarding herbicide use in forestry and to identify practices and experiences in other jurisdictions with respect to approaches to public involvement and in responding to interests and concerns of the public.

Component B of this study consisted of twelve focus group discussions, involving a total of 114 persons, in various parts of Ontario. Six of these were with members of the organized public — i.e., representatives of environmental and other interest groups, and four with the "interested public" — individuals who have expressed some interest in forestry issues; e.g., teachers, woodlot owners, members of outdoor recreation groups. Two groups were also held with professionals (foresters and biologists) for comparison purposes.

The purpose of these focus groups was to identify views of participants about herbicide use in forestry and alternative methods of vegetation and forest management. In addition, participants were asked for their ideas about involving members of the public in decisions regarding vegetation management practices.

Component C of this study identifies implications of the findings for VMAP and its research program, for vegetation management practices, and broader forest management considerations. It presents a strategy for VMAP to use in public involvement, discusses training needs for foresters in working with the public and presents some preliminary thoughts about evaluation of VMAP's public involvement initiatives.

Overview of Findings

Benefits of Public Involvement

There are a number of important reasons for involving the public in decisions about herbicide use in forestry:

- Members of the public increasingly are demanding the right to participate in decisions that affect the use of public land and the environment. They are no longer willing to leave these important decisions to experts or administrators.
- Views of the public, including those of interest groups, increasingly are influencing the policy process with respect to all aspects of forestry, including vegetation management. Public views are now as important as science in influencing decisions about many aspects of forest management.

- The evidence from other jurisdictions is that ignoring public concerns causes them to escalate rather than to abate. Attention to public views and opportunities for involvement can prevent extreme positions from becoming firmly entrenched.
- Involvement of the public in the decision-making process, together with other stakeholders, provides authority and legitimacy for decisions and can result in the identification of creative solutions to seemingly intractable problems.

It is apparent, from the experience in numerous other jurisdictions, that ignoring the public and trying to ride out its concerns is no longer a viable option.

Views of the Public Regarding Herbicide Use in Forestry

This study identified considerable discomfort among the public, in Ontario as well as in many other jurisdictions in Canada, North America, and Europe, with the use of herbicides in forestry. To some extent, these beliefs reflect different values about forests and the environment and feelings that forests should be managed in a different way. There are some differences of opinion between members of the public and forestry professionals about how risk should be determined and what constitutes "acceptable" risk.

Most of the members of the organized and interested public interviewed through this study ideally would like to see the use of herbicides in forestry reduced or eliminated in the long term. Recognizing that this may be unrealistic in the short term, they want to be assured that herbicides are being used only to the minimum extent necessary and only when other alternatives have been ruled out.

In this study, members of the organized public expressed strongest concern and opposition regarding herbicide use. But the general public is also uncomfortable with the use of herbicides. For example, the most recent national survey commissioned by Forestry Canada found that eight in ten (81%) Canadians think that "chemicals used in forest management pose a hazard to human health and the environment." There are no significant urban/rural differences in attitudes. Views of Ontarians are similar to those of other Canadians, as well as what is known about views of the public in the United States and Europe regarding use of herbicides in forestry.

Vegetation Management Alternatives

Following are the types of vegetation management alternatives which were mentioned by participants in this study:

- "Natural", non-chemical methods in general;
- Emphasis on natural regeneration, with minimum human intervention;

- Means of promoting biodiversity rather than the growth of monocultures;
- Preventative measures, such as site preparation;
- Alternative methods of harvesting which will reduce the need for subsequent vegetation management interventions;
- Manual cutting;
- Mulches and ground covers;
- Sheep (with limitations noted);
- Prescribed burns as an alternative which could lead to natural regeneration;
- More attention to biological factors, such as: identifying hardiest stock for planting, tending of seedlings, cutting poplars during the optimal time of the year;
- Alternative means of planting and tending seedlings;
- Biological controls, recognizing that these need to be researched very carefully;
- Research into use of "weed" trees and the understory, as well as other means of more efficient use of forest products, so that the need for specific vegetation management interventions can be minimized.

A Paradigm Shift — And Its Implications for Forestry

It is apparent that a paradigm shift is under way in forestry, reflecting a different set of values about how forests should be managed. For example, when focus group participants were asked to identify more acceptable vegetation management alternatives, they instead consistently raised broader forest management issues. Elements of the new paradigm include the following:

- A greater focus on the environment, sustainability, natural regeneration and biodiversity, where artificial substances such as chemicals are viewed as incompatible;
- A broader view of forest values, with a shift away from a primary focus on commodities such as timber to amenities such as recreation and protection for animal and plant life;
- Different management and harvesting techniques, such as more selective cutting, greater use of "less desirable" species and the understory;

- A different approach to the marketing of forest products;
- Active public involvement in decisions regarding forest management;
- Combining forestry objectives with those of other public policy areas, such as job creation.

A number of leaders within the forest industry have recognized that modifying forest management practices as well as the marketing of forest products to bring them into line with views of the public makes good business sense. For example, Jean Mater, who has written most extensively on the subject and whose latest book indicates how the forest industry should market its products in order to meet the needs of its customers and to be competitive in the global economy, states:

"Sooner or later, public opinion will force the forest industry to adopt the marketing paradigm, which calls for changing the product as necessary, rather than attempting to win public acceptance by redefining it. If it is sooner, the industry is in control."

Experiences in Other Jurisdictions

Many other jurisdictions have experienced strong public opposition to the use of herbicides. In other parts of Canada, North America, and Europe, public pressure has led to bans or severe limitations on the use of herbicides, as well as to changes in forest management practices and the manner in which forest authorities now relate to the public.

Conversely, the experiences of other jurisdictions indicate that when members of the public are involved at an early stage, positions are less likely to become firmly established and compromises emerge.

Need for a Strategy of Public Involvement

It is clear from the literature and from the experiences in other jurisdictions that one-way communication strategies which do not address the interests and concerns of the target audiences tend not to be successful in influencing public opinion. Indeed, they can even backfire.

For the most part, members of the public place little credibility in information or statements of representatives of the forest and chemical industries or of government. A number of participants in the focus groups also questioned the credibility and independence of some university professors and scientists. An important exception is that credibility and trust can develop with representatives of the above groups, but generally only when there is some form of personal relationship.

Consequently, members of the public do not accept assurances from any of the above sources about the safety of herbicides. In particular, they are concerned about the long-term cumulative effects of herbicides on water supply, the environment, and human health. Many people say that they want information on both sides of a question in order to make up their own minds. Thus technical information, from whatever source, which presents just one perspective tends to be treated with suspicion.

If one-way communications are not effective, how can the public be engaged? The experiences in other jurisdictions and in other settings demonstrate that strategies of public involvement which give members of the public a meaningful role in decision making can have many benefits, such as those listed on page iii.

This, however, has implications for the role of forestry professionals. Foresters, similar to experts in other areas, can no longer rest upon their expertise. Interaction with the public is now a significant part of their jobs, and they require assistance in the development and application of new skills in facilitation and public involvement.

Implications and Recommendations

1. Implications of the Research Findings for VMAP's Overall Strategic Direction

VMAP's mandate, of moving towards a long-term, substantial reduction in herbicide use in Ontario's forests, generally appears to be consistent with the views and demands of the public. Thus the public *should* be supportive of the direction taken by VMAP.

Initial response to VMAP, however, has been mixed. In order to obtain public support, VMAP needs to establish its credibility and independence.

Recommendations

- *VMAP should recognize the public as a client, stakeholder, and a participant in the program.*
- *All aspects of VMAP should focus on alternatives to herbicides.*
- *VMAP should provide opportunities for meaningful public involvement in its direction, through application of strategies recommended in this report.*
- *VMAP should identify how its research is leading to reductions in herbicide use in vegetation management practices.*

2. Implications for the VMAP Research Program

In order to address interests and demands of the public, the focus of VMAP's research program needs to be on alternatives to herbicides. In addition, VMAP needs to establish credibility for its research with members of the public, in particular with the organized public, through such means as involving them in some way in deciding upon VMAP's research priorities, making research findings available in lay as well as technical formats, and through other means discussed in the text.

Recommendations

- *The VMAP research program should focus on identifying alternatives which will minimize the need for herbicides;*
- *VMAP should involve the organized public in deciding upon its research priorities as one means of building credibility;*
- *Research findings should be made available in formats suitable for laypersons.*

3. Implications for Vegetation Management Practices

As discussed earlier, most members of the public would like to see herbicides used as little as possible in forestry. Some form of Integrated Vegetation Management (IVM) strategy appears to be the most acceptable approach.

A number of focus group participants stated that labour intensive approaches to vegetation management would be consistent with broader social welfare objectives as well as the provincial government's priority to job creation. This theme has also been identified in other jurisdictions.

Recommendations

- *OMNR should adopt some form of Integrated Vegetation Management (IVM) approach to minimize the use of herbicides in forestry;*
- *Consideration should be given to linking more intensive use of manual cutting and tending with provincial job creation objectives.*

4. Broader Forest Management Implications

As discussed above, it is apparent that a paradigm shift is under way in forestry, reflecting a different set of values about how forests are to be managed, along with a broader view of forest products and how these should be marketed. When focus group partici-

pants were asked to identify more acceptable alternatives to herbicides, they instead consistently raised broader forest management issues.

For example, many participants view herbicides as a remedial measure needed by "sick" forests resulting from poor forest management practices in the past. They say that OMNR should play a leadership role in identifying that our forests are not unlimited resources and in encouraging more responsible use of forest products (e.g., recycling).

Recommendations

- *OMNR should address concerns expressed by the public regarding the way forests are managed and explore alternatives which are being used in other jurisdictions.*
- *OMNR should actively explore alternative ways of marketing forest products in keeping with the new paradigm.*

5. Public Involvement: Definitions, Principles, and Target Groups

Public involvement means providing opportunities for members of the public to play a meaningful role in decision making about issues of public concern. "Public education" and "consultation" are sometimes defined in similar ways.

Key principles for public involvement which are identified in the text include:

- Recognize and accept the validity of different viewpoints
- Listen without judging
- Provide a meaningful role for stakeholders in decision making
- Make it as easy as possible for those who wish to get involved to do so
- Make sure that all levels of the organization involve the public
- Use a community development approach
- Think in terms of social marketing rather than selling
- Be patient

Recommendations

- *The organized and interested publics should be recognized as clients and stakeholders of VMAP, with first priority being given to the organized public.*

- *The organized and interested publics should be provided with opportunities to play a meaningful role in decisions regarding VMAP through a process of public involvement which follows the principles listed above.*
- *VMAP should provide participants in the focus groups with a summary of this report, along with an indication of how it plans to proceed.*

6. A Strategy for Public Involvement

The recommended approach for VMAP to encourage public involvement is a strategy offering four different levels of input:

Level 1 — Information Sharing

Level 2 — Resource Sharing

Level 3 — Cooperative Planning

Level 4 — Collaborative Action

The purpose of providing multiple levels for public involvement is to give target group members the option to participate to the degree *they* desire. For example, some persons only want to be able to have information which addresses their concerns. Level 1 would apply to them. Others may wish to be able to provide some input, at Levels 2 or 3. Others, particularly the organized public, will wish to get involved more intensively, at Level 4, in working on joint solutions to problems or concerns. Thus, it is important that VMAP make all levels of involvement available to its stakeholders in some way.

The text discusses each of these levels of involvement and provides guidelines and potential examples for how these can be implemented.

Recommendation

- *VMAP should adapt a strategy of public involvement which offers members of the organized and interested publics opportunities to get involved at four different levels of involvement.*

7. Training of Foresters in Interacting with the Public

The role of the forester is changing, in Ontario as well as elsewhere in North America and Europe. Interacting with the public is now a significant part of the forester's job. This represents a significant departure from past practices and requires skills different from those in which foresters have been trained.

The report identifies a number of information needs and skills with respect to public involvement which are needed by foresters. OMNR should provide training and support in these areas.

Recommendations

- *OMNR should develop training and provide support to its staff regarding how to interact with the public;*
- *This should be provided to all VMAP staff and to all OMNR staff who need to interact with the public.*

8. Program Evaluation of VMAP's Public Involvement Initiatives

It is premature to develop a plan for evaluation of VMAP's public involvement initiatives until these have been determined. The text provides some preliminary thoughts, including examples of evaluation questions, priorities and methods.

Recommendations

- *VMAP should evaluate its success in reaching and engaging the organized and the interested publics.*
- *VMAP should establish a means of obtaining ongoing feedback about what the organized public in particular, and also the interested public, think about its activities and also its approaches to public involvement. This should be supplemented by more formal means of evaluation, carried out by independent evaluators, from time to time.*

Conclusion

The goal of VMAP — a long-term reduction in herbicide use in forestry — appears to be consistent with what the public wants. But in order to obtain public support, VMAP must establish its credibility and show that it is taking interests of the public into account.

For VMAP to establish its credibility it must implement a strategy of public involvement which provides members of the public with an opportunity for meaningful involvement in decision making about the direction of VMAP and about vegetation management practices. The recommendations provided in this report may, at first glance, appear challenging. But they need not be. In our view, the two most critical elements are for VMAP to establish an ongoing relationship with the organized public and to provide

them with a role in deciding upon the VMAP research program. Other steps can follow from this.

Experiences in other jurisdictions shows that when the public feels they are excluded from the decision-making process and that their views are not taken into consideration, demands escalate and confrontations arise. Conversely, evidence from other settings suggest that public involvement can prevent extreme positions from becoming firmly entrenched, can provide authority and legitimacy for decisions that are reached, and can result in the identification of creative solutions to seemingly intractable problems.

PART A:

**REVIEW OF THE LITERATURE AND
EXPERIENCES IN OTHER JURISDICTIONS**

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1. Introduction and Purpose

The Vegetation Management Alternatives Program (VMAP) is one component of the new sustainable forestry initiative within the Ontario Ministry of Natural Resources (OMNR). The goal of the VMAP is to gradually reduce dependence on herbicides in Ontario's forests by developing alternatives and a better understanding of forest ecosystems through research, education, and field delivery.

One of the VMAP's major components is public education. Education is intended to involve active participation and dialogue with all who have a stake in forest management, rather than just one-way communications. A major component of the public education program involves interaction with stakeholder groups (e.g., environmental and outdoor organizations), as well as establishing a dialogue among forest managers, researchers, and interest groups.

Public attitudes are expected to play a major role in shaping the priorities of the research program, as well as of field delivery. Thus public education, involving ongoing assessment of public sentiment as well as educational activities, is a critical component of the VMAP.

The purpose of this study is to provide direction for the development of the VMAP Education Program. It has the following objectives:

- To identify current public views regarding herbicide use in forestry;
- To identify the extent to which these beliefs are value based versus open to change with more technical information;
- To identify the implications of public attitudes, and the experiences in other jurisdictions, for:
 - The VMAP research program;
 - Vegetation management practices;
 - Broader forest management practices and considerations for OMNR;
- To develop a strategy for a VMAP public education program, including methods for public involvement.

The study was carried out in 3 phases. Part A report presents the findings from the first component of this study which pulled together information about the above questions from the literature and from experiences in other jurisdictions. In addition, this component was expected to identify questions to be explored further later in the study, as well

as preliminary ideas and implications from the research which should be taken into account in the development of the VMAP education program.

2. Methodology

Component A involved two major methodological approaches: 1) a literature review and 2) key informant interviews, carried out during the summer and fall of 1992.

Our literature review took a broad scope, searching for relevant information among both scholarly and popular sources, as well as unpublished reports of relevance. While our primary focus was on North America, we also searched for information in other jurisdictions.

Our approach to the literature review took a number of forms. We carried out a variety of computer and manual searches, coupled with visits to a number of different libraries. We asked our contacts to identify relevant materials for us. And we followed up leads and references referred to in other articles.

Appendix 1 provides our reference list, along with brief annotations for articles of particular interest and relevance to VMAP.

We also interviewed a number of key informants across Canada, the United States and elsewhere. These persons are listed in Appendix 2. Contacts of particular interest are briefly noted. Some of our informants were primarily useful in referring us to other persons or to sources of information. Other persons were able to give us a wealth of information, based upon their own knowledge and experience, as well as share experiences in other jurisdictions faced with similar issues to those now confronting VMAP. Many of these contacts were also able to provide us with valuable unpublished documents, which we included in our literature review as appropriate.

In the information gathering phase, we uncovered lots of relevant information, indeed more than we expected. In general, a consistent picture emerged about the nature of public beliefs and their implications for forest management in general, use of herbicides more specifically, and implications for new approaches to vegetation management and interacting with the public. This picture emerged across jurisdictions and in various sources including the literature, and views and experiences of our informants.

3. Is Public Opinion Important?

Until recently, the public has left foresters alone to make their own best decisions about how forests should be managed, about whether or not to use herbicides and under what conditions they should be used. The situation now, however, is radically different.

It is clear from the literature, as well as from our interviews with government officials and other informants in numerous jurisdictions, that the policy process, with respect to vegetation management as well as for other forest management issues, is now either driven by public views or at the least, is very sensitive to it. As we discuss later, there is now strong public concern about the use of herbicides coupled with the *power* to do something about it.

As Kimmins (1991), for example, has stated: "Thanks almost entirely to the dedicated efforts of environmentalists, there has been a dramatic awakening of public opinion about forestry and the environment. . . . An aroused and vocal public [along with the efforts of] the environmental movement . . . has resulted in a re-education of industrial leaders and politicians, the passage of legislation to reduce environmental pollution, degradation, and loss of biological diversity, and in many cases has resulted in significant improvements in the quality and sustainability of forest management."

Ignoring the public, trying to ride out its concerns, is no longer a viable option. Furthermore, there is overwhelming evidence (e.g., as discussed by Mater 1977, 1992; Mater and Mater 1977), that "education" alone will not "set the public straight." It is now necessary to engage interested members of the public in a way which actively involves them in the decision-making process and where applicable, to bring current forestry practices in line with public views.

In numerous jurisdictions around the world, public concern has led to severe restrictions as well as outright bans on the use of herbicides under any conditions. It appears that ignoring public concerns causes them to escalate rather than to abate, and that greater attention to public views and opportunities for involvement might have prevented extreme positions from becoming so firmly entrenched.

Lee (1991) indicates that localized concerns regarding protecting the immediate vicinity from herbicide spraying frequently broaden in scope and power. For example, lack of attention to local concerns regarding a proposal for aerial spraying in a specific site in northern Saskatchewan escalated to widespread public concern about the use of herbicides *anywhere* in the province by *anyone* which resulted in a province-wide suspension (Leis 1985, Fitzsimmons 1985). Walstad and Dost (1986), Lautenschlager and Bowyer (1985) and Wiebecke (1976) are among others in different jurisdictions and different contexts who have observed how the failure to attend to public concerns early on caused these to escalate to a situation of crisis.

Bolle (1971) and Rich (1972) are among writers who noted, some 20 years ago, the importance of attending to public opinion and in giving the public a role in decision-making. Bolle (1971), for example, indicated how "local public dissatisfaction [regarding environmental quality in Bitterroot National Forest in Montana] grew from a small local issue to a national issue as the dissatisfied public found it impossible to be effectively heard by local officials."

Rich (1972), speaking to an audience of forest industry managers, observed that "public involvement will extend to decisions in private forest land use." He defined public involvement as meaning "participation by the public in decisions that affect the quality of the environment." He distinguished this from public relations, which he described as understanding public attitudes and opinions, taking them into account, and attempting to influence them.

Leading industry spokespersons, in both Canada and the United States, have spoken to their colleagues about the importance of recognizing and responding to public opinion. For example, the titles of the articles by Wallinger (1990), past president of the American Forestry Association: *Industry Challenge: Heed Public Perceptions*, and by Zimmerman (1990), chairman of Noranda Forest, Inc.: *Environmental Issues Dominate Canada's Future*, speak for themselves.

Governments, and foresters as well, are recognizing the need to take into account public views (although, as we discuss in Section 8, there is still considerable paternalism among many professionals about the public). For example, the Forestry Research Advisory Council of Canada (1992), based upon input from provincial and territorial forest research bodies, identified "public concern about forestry, the environment, and sustainable development" as the number one issue which may affect research priorities. The top two priorities it identified for research, respectively, are: "environmental effects of forest management" and "pest and weed management and alternatives to chemicals".

Ontario's newly developed approach to forest management (e.g., Forest Policy Panel 1992, Ontario Ministry of Natural Resources 1992), includes a focus on sustainable forestry, which incorporates forest values broader than timber production as well as a strong emphasis on public participation in decision-making. Indeed, the VMAP is based upon the need to seek alternatives to herbicides which would be acceptable to the public (Wagner 1992a, 1992b; Wagner *et al.* 1992).

It should be noted that recognition of the need to be sensitive to the views of the public, involving more than "education" but meaningful participation in decision-making, is a worldwide phenomenon, in forestry as well as in other areas of public policy. For example, Kimmins (1991) indicates that there is public concern "about forestry and the environment in those countries in which people have the wealth, the time, and the political freedom to be concerned about more than food, shelter, and personal security." Resolutions of the Rio conference (United Nations 1992) assert that there should be more opportunities for participation of all people in the formulation, development, and implementation of forest-related programmes and other activities. One of the fundamental beliefs in the Canada Forest Accord, enunciated by the Canadian Council of Forest Ministers (1992) is that: "Canadians are entitled to participate in determining how their forests are used and the purposes for which they are managed." The Council, in its statement, also acknowledges the need to search for alternatives to chemicals.

Virtually all programs within all Ontario government ministries are now required to consult with the public, including with groups who have previously considered them-

selves to be disenfranchised. The business community, across all sectors, is increasingly recognizing the need to heed public opinion (e.g., see Olive, 1992, who cites Adam Zimmerman as a business leader who has "tuned in to the new, more demanding times and has worked successfully to sensitize the business community to environmental concerns.").

4. Public Attitudes

A. Who is the Public?

The "Interested" and the "Organized" Public

Mater (1977) describes the public as a "large amorphous group, any part of which may suddenly coalesce into action. They tend to be followers rather than leaders but are no less powerful. The public is also a multiplicity of publics. These publics sometimes blend their efforts and other times challenge one another."

There is considerable discussion in the literature, and among our respondents, about the "silent majority" and how their views may be different from those who are more vocal. Many feel that the general public is more moderate and balanced in its views than those of "extremists". Some, such as Wiebecke (1976), say that the public is uninformed, led by vocal and persuasive environmental groups. Others, such as Knopp and Caldbeck (1990), say that "it is not enough to assume that volunteer organizations or public interest groups will adequately or fairly represent the total spectrum of public values" and suggest that there is a range of viewpoints, and the general public may be the best arbitrator among conflicting values. O'Riordan (1971) expresses similar sentiments.

At first glance, there does not appear to be total consensus about how to deal with the "silent majority". O'Riordan (1971), for example, argues that "their views cannot and should not be ignored, for though the majority may be 'silent', they are not necessarily indifferent." Hendee *et al.* (1974) appears to concur, stating that: "Resource managers cannot hide behind the 'silent majority'. Silence may reflect lack of interest. It may also reflect a lack of information on the part of a potentially interested client."

There is general agreement, however, that while every effort should be made to enable anyone interested to get involved and express their views, ultimately only the views of those who are willing to express them can be taken into account. This perspective is stated most eloquently by Behan (1988), in his plea for constituency-based management, who says that forests should be managed according to the desires of those who know and care about them, not the silent majority. He adds that this approach is characteristic of the democratic process and is also used for other areas of public concern.

However, no one should be excluded who does not wish to be, and involvement should be "participative" rather than "consultative", where anyone who wishes can be actively

involved in the management decision process (Behan 1988). And in this respect, Hendee *et al.* (1974), as well as others, concur completely.

For example, the approach used in the Pacific Northwest Environmental Impact Statement regarding vegetation management (USDA Forest Service 1988), which strongly advocated public participation in its Record of Decision, was to use a variety of strategies to reach out and to make it as easy as possible for anyone who was interested to come forward and express their views. The Ontario Ministry of Natural Resources' Forest Policy Panel (1992) is using a similar approach in its public consultation.

The evidence also suggests that it may be wishful thinking on the part of those who believe that the "silent majority" feels differently regarding forest management and use of herbicides than those who are more outspoken. To be sure, there is a spectrum of views on this issue. But all the evidence discussed in the following section suggests that the bulk of the general public, along with "activists", supports greater attention to environmental concerns and does not feel that the use of chemicals is consistent with this position. For example, as we discuss on page 9, some 81 percent of the general public in Canada think "chemicals¹ used in forest management pose a hazard to human health and the environment." And, as we discuss in Chapter 6 in particular, there is no evidence which suggests that providing more information to people who are uninformed will win them over. Indeed, the available evidence suggests the contrary is more likely.

There also is a tendency, as Griss (1992) has indicated, to lump all "environmentalists" together and fail to recognize "the diversity of groups concerned about the environmental effects of forestry." Griss indicates that there are over 2000 environmental groups in Canada, as well as other organizations active on environmental issues to some degree. These environmental groups can be divided into some fourteen different categories.

Griss also addresses the question of who can legitimately claim to speak for the public. He suggests that one way to determine if a group actually represents large numbers of people is to consider the extent of its funding base. He also cautions applying this criteria inappropriately.

Urban/Rural Differences

A common perspective, repeated by numerous informants, is that much of the opposition to herbicide use in forests (as well as other current forest management practices) comes from urbanites with limited contact with the forests, except for occasional short-term forays for recreation purposes, many of whom are ignorant of the realities of the natural world.

¹The terminology used in this report reflects that used in the source material. For example, some of the material speaks specifically of "herbicides". Other documents, however, speak more broadly of "pesticides" or "chemicals".

For example, Vaux (1982) suggests that much of the opposition to commercial forestry comes from urban people with different values. Breton and Tremblay (1990) indicate that opposition to herbicide use in Sweden which ultimately led to inhibiting legislation came from an increasingly urban population.

Other evidence suggests that urban-rural distinctions are now blurring. Articles by Lee (1991) and Shands (1991), in addition to Vaux (1982), explore various aspects of this issue. They point out, for example, that not all rural residents are farmers. Recent demographic changes now mean that many "rural" people may work in cities, and/or share "urban" values. Newcomers to rural communities may come with different values and also with sophisticated skills in communications (Lee 1991). Environics (1992b), as we discuss later, did not find any significant differences by community size in its recent national survey regarding attitudes about forest management.

In some cases, local residents in rural areas (e.g., see Leis (1985) regarding a plan for spraying in northern Saskatchewan and Dare (1985) regarding a similar proposal in Lorane, Oregon) can be most concerned about the impact of herbicide use in forests in their own vicinity. As Lee (1991) adds, the NIMBY ("not in my backyard") phenomenon, coupled with demographic changes, means that local opposition — which can easily widen in scope as residents of different local communities form coalitions — is likely to become more common.

This does not mean there are no differences between communities. But it does mean that, given changes in the makeup of today's society, generalizations and stereotypes which may have applied in the past are no longer accurate.

B. What Does the Public Think?

The information cited in this section indicates that the public is overwhelmingly against the use of any chemicals, including herbicides, in forestry. The public is for stronger environmental protection, even if this adversely affects the economy and employment. This viewpoint appears to be based largely upon different values and views of the forest and how it should be managed. It is held by the public-at-large as well as by "activists". Thus, while to a limited extent, compromises may be possible and additional information may influence some people, the public is clearly demanding a different approach to the management of the forest which does not include use of chemicals.

The above summary of public attitudes emerges from virtually all our interviews, and is stated or implied in many of the papers in the reference list. It emerges both from those who agree with the new public perspective, as well as from others who fervently wish that it were not so.

The report (*Sustainable Forests: A Canadian Commitment*) of the Canadian Council of Forest Ministers (1992), points out that extensive consultation through public forums across the country revealed that Canadians want alternatives to chemicals. Breton and

Tremblay (1990) discuss the nature of public opinion in Sweden and how it led to legislation restricting herbicide use. Carrow (1991) indicates that "We have learned through media criticism, civil disobedience, and public opinion surveys that we do not have general public support for the use of pesticides in timber management. . . . Whatever the logic, the fact remains that Canadians are opposed to the use of chemical pesticides in forestry."

The Record of Decision for Managing Competing and Unwanted Vegetation in the Pacific Northwest Region (USDA Forest Service 1988) indicated that through its extensive public consultation process regarding the use of herbicides in vegetation control, they heard three major messages: vegetation management practices should not pose a health threat, goods and services should continue to be produced at a high level, and the forest environment should be protected.

The public even appears to rate protection for the forest environment higher than economic considerations. This is one finding of the recent survey carried out for Forestry Canada (Environics 1992a, 1992b). Radosevich, in an interview, indicated that research under way at Oregon State University has found that even where forestry is the prime industry, there is still greater concern over the environment than jobs. Similarly, McLean (1991) says that: "A Weyerhaeuser nationwide image study reports that three out of five government officials and members of the public favour *more* regulations to protect the environment from forest-products companies — even if people lose their jobs."

Mater (1977; Mater and Mater, 1977) discuss the nature and particularly the changing role of public opinion, along with public concerns about forestry practices. Fifteen years later, she (Mater, 1992) speaks of "the currently widely-held perception that forests are beneficial to the human condition, but that the forest industry deteriorates the environment." Wiebecke (1976) discusses the importance of negative public opinion to forestry in Germany and how it is shaped. Dohrenbusch (1992, pers. comm.) and Dohrenbusch and Frochot (1992) point out that, largely as a result of negative public opinion, herbicide use is now severely restricted or banned throughout Europe. Kimmins (1991), as we have already discussed, indicated that the public around the world feels that there should be more environmentally sound forest management should be practiced.

While it is clear that the public is opposed to the use of herbicides in forestry, it is possible that some members of the public are prepared to tolerate some use. For example, this was one of the findings emerging from the public consultation in the Pacific Northwest (USDA Forest Service 1988). Hajo Versteeg, who chaired the Pest Management Advisory Board which reported to Agriculture Canada, told us that: "the public attitude is not that we don't want pesticides but rather the way you do it is what we're concerned about." Culhane (1981), while not dealing specifically with herbicide use, speaks of the range of public opinion about other related forest management considerations.

One gets the impression, both from the comments of people within the forestry profession as well as those opposed to current forest management practices, that environmental groups seem to be opposed to use of any herbicides under any conditions (e.g., see Mitchell 1992). As we have already discussed, this appears to be the situation in Saskatchewan and in some other jurisdictions.

The position in the Canadian Nature Federation's (1989) forest management policy, however, states:

"Reliance on chemical pesticides and herbicides should be drastically reduced, or eliminated, if possible. It should be replaced by biological control methods or integrated pest management, less reliance on even-aged monocultures, and alternative methods of site preparation and tending of forests."

This position, which implicitly accepts that there may be situations where some use of herbicides is appropriate, may be compatible, at least in some respects, with the approach of the VMAP. And as we discuss later, when multi-stakeholder groups are formed to study specific issues, less extreme positions frequently emerge.

"Hard" Data

In addition to the above evidence, there is also some survey data which has explored how the public-at-large feels about use of herbicides as well as related forest management considerations. Forestry Canada, for example, has commissioned at least three national surveys over the last several years. Its most recent survey (Environics, 1992a, 1992b) was carried out in 1991 and attained considerable publicity when it was released in February, 1992.

Following are some of its key findings:

- Four out of five respondents (81%) say that chemicals used in forest management pose a hazard to human health and the environment;
- About three quarters (74%) say active replanting of seedlings produces a superior forest than leaving forests to grow on their own;
- Two thirds (66%) say that the forest industry should be restricted to reduce its environmental impact, in spite of potential economic consequences;
- Environmental and ecological benefits of forests are ranked by both urban and rural residents as above the economic value of forests as a source of jobs;
- One in ten (9%) were familiar with the term "biodiversity";

- While data specific to Ontario were not provided in the publicly released report, it appears from the discussion of regional differences that responses for Ontario are very close to the national average;
- Environics, in its conclusion, states that "criticism of the forest industry's impact on the environment is no longer noticeably greater among urban residents in Central Canada."

This survey only had one question regarding use of chemicals. While the response to this question demonstrates very strong opposition to herbicide use, there was no further probing to better understand how strongly people really feel about this, and if there are conditions where herbicide use is more or less acceptable. Of note is the strong support for active replanting, which is consistent with other findings which suggest public interest in regeneration.

An earlier survey (Canadian Gallup Poll 1986), also commissioned by Forestry Canada, did explore attitudes towards herbicides in a bit more detail. Overall, 23 percent of the Ontario respondents (compared to 28 percent for the full national sample) said herbicide use was "too great", 39 percent said "about right", 16 percent said "not great enough" and 23 percent "don't know". Those who rated the condition of the forests in their province as in bad condition were more likely to feel that herbicides/pesticides were overused. However, 67 percent of Ontarians (70 percent of Canadians) feel that there is a problem for people living in areas where spraying is done, and 77 percent (76 percent nationally) said that spraying by airplane presents the greatest danger to health. A large majority (80 percent) were in agreement that the general public should have more say in how forest lands are managed.

A survey commissioned by Ontario's Ministry of Natural Resources (Insight Canada Research 1990) did not specifically explore attitudes to vegetation management. But on an open-ended question, the environment was identified as the "single most important issue affecting Ontario today", ahead of taxes, the economy, national unity, and other concerns. The major environmental concerns, again when asked open-ended, were garbage/recycling and pollution. The majority of respondents, however, say that the Ontario government has not done enough to protect Ontario's forests, that not enough trees are replanted, and that forests are not managed in an environmentally sensitive manner.

Carrow (1991) reports on some findings of a survey by the Canadian Association of Consumers, which found that only 13 percent of Canadians realize that we have government regulation of pesticides and that over 70 percent of Canadians are opposed to the use of chemicals in the forest.

King (1991) reports on the findings of a national survey in the United States, commissioned by the American Farm Bureau, about public attitudes to food safety, agricultural chemicals and on-farm use. Although this survey focused on pesticide use in agriculture, its findings may have implications for pesticide use more generally.

A key finding of this survey is that respondents are more concerned about pesticides (89 percent) than all other food issues. Some other highlights of this survey include:

- Three out of five respondents (62 percent) agreed that "the dangers to human health posed by pesticides outweigh their benefits in protecting crops from insect pests."
- 81 percent said that it is likely that many agricultural chemicals are not really safe and that "no one really knows what the long-term effects will be of all the chemicals used in agriculture."

King (1991) says that "the responses suggest consumers harbor a general fear of chemicals. Chemicals represent an involuntary risk, and whether it's fair or not, farm chemicals are perceived as a harmful tool." But he added that:

The public "also showed a willingness to accept reasonable alternatives. When asked to choose between three alternative courses of action — abolishing chemicals, maintaining current use levels or continued moderate levels of use — the public chose a moderate course of action. Nineteen percent chose the status quo, 15 percent wanted all chemicals abolished, while 66 percent urged farmers to use chemicals judiciously."

We urge caution in the interpretation of survey findings. Without extensive probing in order to understand the basis of expressed views and how firmly they are held, which can generally be best done through qualitative research approaches, survey findings should only be used for indicating the general direction of public viewpoints.

For example, while surveys have the aura of objectivity (e.g., the Environics survey claims a margin of error of about two percent), in fact responses to survey questions are heavily dependent upon how they are worded and the context in which they are asked. Survey results can also be meaningless if respondents do not understand the terminology used in questions or concepts on which they are asked to express an opinion.

Public opinion these days is also extremely volatile. For example, views about herbicides of respondents to the Canadian Gallup Poll (1986), carried out over six years ago before the environment achieved its current profile, appear mixed. This is unlike findings from more recent surveys, as well as other sources of information (e.g., views of key informants interviewed in this study), which suggest that current views about herbicides are less favourable.

In our view, the existing evidence is overwhelming in demonstrating public opposition in general to herbicide use. But there does not appear to have been any in-depth exploration of the reasons for these views, how firmly they are held, and under what circumstances, if any, herbicide use might be tolerated. Parks and Recreation (1990), while speaking generally about resource management and program development rather than

silviculture, has pointed out the need for a more systemic assessment of public values and attitudes.

The only research project we have been able to identify, in addition to this study, which is exploring public attitudes in any depth, is currently under way at Oregon State University, as a joint effort of the Colleges of Liberal Arts and Forestry (Steel *et al.* 1992). This study, however, while exploring attitudes to a variety of natural resource and forestry issues, did not ask specifically about herbicides. In addition to our literature review, we asked an extensive array of persons across North America and beyond (Appendix 2) if they were familiar with any completed or ongoing relevant research activities.

C. Is the Public Ignorant and Inconsistent?

"The forest industry has concluded that the public is illogical, emotional, and ignorant of the value of good forest management." (Mater 1992) But is it? And does it matter?

Many of our informants, as well as numerous citations in the literature (e.g., Carrow 1991, Green 1984, Kimmins 1991, Manfredo *et al.* 1990, Mater 1977, Shands 1991, Wiebecke 1976), point out the limitations of public knowledge about the forest, forest management, and herbicides. For example, Shands (1991) says that "there may be a fundamental lack of knowledge about the forest environment." Wiebecke (1976) indicates that the public is often wrong on factual information and Kimmins (1991) points out that many of the statements of environmentalists are inaccurate.

We have also been told about numerous inconsistencies in views of the public, for example:

- Inflating the risks of herbicides beyond that held by the scientific community;
- Opposing herbicide use in the forest, while approving of its use on an adjacent highway or in urban settings;
- Public acceptance of the spraying of malathion over the San Francisco Bay area to control the Mediterranean fruit fly while at the same time, spraying of phenoxy herbicides in a nearby forest where there was minimal chance of exposure was banned (Green 1984);
- Opposition to low levels of herbicide application in forests while accepting much greater use, with higher levels of exposure, in agriculture and urban settings;
- Opposition to herbicide use in remote forests by urbanites who, at the same time, use herbicides in their own urban garden and complain if their urban parks are not maintained in a pristine state (Hannah 1992);

- Exhibiting ill effects from "spraying" which in fact never took place;
- Preference for biological alternatives even though the risks of these are unknown and may even be greater than for synthetic chemicals.

There is no question that many members of the public, as well as many activists, may have at best only partial knowledge. But this is no different than for most issues of public policy, and does not provide sufficient justification to dismiss these views out of hand.

The knowledge base of people working within the forestry field may not be perfect either. For example, Kimmins (1991), while indicating that many of the statements of environmentalists are inaccurate and that the public still has a very incomplete understanding of the ecology of forests and their management, adds that: "Exactly the same criticism can be applied to the rhetoric that has come from some industrial leaders and has been echoed by some resource managers at lower levels in the forest industry." Through our interviews, we learned that an internal attitude study among the staff of the British Columbia Ministry of Forestry indicated a lack of knowledge among the ministry staff itself regarding herbicides and other matters (which, as a result of the study, was later addressed through a variety of means).

Furthermore, when one examines apparent contradictions or inconsistencies in attitudes in more detail, rational reasons can often be found for these (whether or not someone else agrees with the reasoning is besides the point as long it makes sense from the perspective of the individual in question). For example, Green (1984) says that one reason Californians tolerated malathion spraying was that the benefits were immediate, certain, visible and relevant, unlike for herbicide spraying in the forests where the benefits were neither large nor certain and would only be realized, if at all, some 30 years hence. As our discussion on risk perception indicates, individuals are more likely to tolerate risks under certain conditions, for example when it is a matter of personal choice rather than imposed upon them by others.

The social psychology literature, in particular with respect to the relationship between attitudes, beliefs and behaviour change, is also relevant. This literature, which goes back many years, indicates that, at best, there is an imperfect relationship between attitudes and behaviour. The classic, oft-cited study demonstrating how attitudes and behaviour, with respect to any subject matter, can appear to diverge is LaPiere's study of racial prejudice in the 1930s. LaPiere accompanied a Chinese couple who had no trouble obtaining service in a variety of hotels and restaurants, yet when he wrote to these same establishments asking them if they would serve members of the Chinese race, 90 percent said that they would not.

Probably the most extensive and useful research in this area is that of Fishbein and Ajzen (1975, Ajzen and Fishbein 1977). Burrus-Bammel (1978) also briefly discusses some of this research specifically in the context of forestry education. Fishbein and Ajzen (and others) point out that attitude is only one of many factors determining

behaviour. They argue, supported by considerable research, that: "The strength of an attitude-behaviour relationship depends in large part on the degree of correspondence between attitudinal and behavioural entities." For example, a person may have positive attitudes toward religion but still not attend church. If one examined attitudes towards going to Church X at 10:00 A.M. the forthcoming Sunday, however, one would likely find a closer relationship.

Thus a person could have positive attitudes towards the environment and expect the forest industry to adopt more environmentally sensitive practices, but still use styrofoam cups (or disposable diapers) due to the convenience factor and for other reasons. Similarly, an individual can be opposed to the use of herbicides in general and in forestry, but still find reasons to justify applying pesticides on his/her urban garden.

Specific beliefs and attitudes are also most frequently derived deductively from overriding values or a conceptual framework, rather than "rationally" from adding together perceptions or "facts". Thus persons favourably disposed to a particular political issue or candidate are unlikely to change their minds solely based upon a few facts which do not fit the overall pattern. Similarly, someone favourably disposed towards tighter environmental protection and control over forest management practices is not likely to be bothered by a few "details", even if they are hard to explain away.

This may sound a bit like: "Don't bother me with the facts, my mind is already made up." Such behaviour, however, can be perfectly logical. For example, the research on human perception indicates that perception involves an interaction between sensations and one's internal cognitive map, which includes past experience and expectations. Rejecting sensations or "perceptions" which do not fit the pattern may have evolutionary sense, as an individual sensation is more likely to be wrong than a lifetime of experience.

In any case, ultimately objective "facts" are only one part of the picture. People act only in accordance with their version of the truth, right or wrong, even when there can be "objective" determination of "reality". Furthermore, as Green (1984) stated: "The herbicide controversy does not pose questions of whose determination of safety is right or wrong, but rather whose safety determination is accepted by the political system." And as we discuss later, Mater (1977) observes that even if one can convince the public that some of their beliefs are based upon misinformation and are wrong, there is still no assurance that they will then agree with the proponents of present forestry and vegetation management practices. People can, and do, agree on the facts, but still reach opposite conclusions.

D. How Does the Public Assess Risks? Who is Credible?

Representatives of the forest and chemical industry (e.g., Green 1984, Harris *et al.* 1992, citations and critique by Comstock 1989) and others (e.g., Walstad and Dost 1986) state

that concern over the dangers of herbicides are overstated. After all, there is a regulatory process in place to review pesticide safety and to establish conditions for their use before permission to use is granted (Carrow 1991).

The public, however, does not believe assurances of the safety of herbicides. In part, this is a result of the lack of credibility of just about *anyone* speaking on behalf of the industry. For example, Mater and Mater (1977) state that: The public "now doubts our credibility, our good will, and the objectivity of our science." Mater (1977) indicates that citizens see the forest industry as "big industry" and "big industry has little credibility. No matter what it says or does, it simply is not believed." More recently, she (Mater 1992) asserts that "the public's negative perception has become more firmly entrenched, perhaps to the point of irreversibility."

The literature is replete with statements like the public's distrust of "black box decisions" (Knopp and Caldwell 1990) and lack of belief in "experts", including government spokespersons and scientists, who assert that herbicides are indeed safe. As Green (1984) states: "Trust in foresters runs somewhere near that placed in the utility company running Three Mile Island. . . . We must face the fact that much of the public sees our white hats as black." Mitchell (1992), in a graphic statement, says:

"The industry has gone bonkers on the use of herbicides to 'release' stands of valuable young trees. . . . It is said that the herbicides have no harmful environmental effects. It has also been said that the moon is made of green cheese. . . . Many folks are fed-up-and-not-going-to-take-it-anymore, and a few of these are prone to view *any* government gestures as a conspiracy to rob them of their constitutional rights."

Responses to surveys of the public asking who they trust do not appear quite so bleak. For example, the survey by the Canadian Gallup Poll (1986) found people working in the forest industry, professional foresters, and universities/technical schools rated highest (7.0, 6.8, and 6.7 out of 10, respectively), with industry spokesmen, government, unions, and elected representatives rated lowest. The survey in the United States (King 1991) obtained the ratings of "very" or "somewhat" trustworthy for: farmers (93 percent), scientists (84 percent), and government officials (49 percent). But as we discussed in the previous section, caution should be used in interpreting findings about generalized attitudes where the specific context has not been identified.

Lack of public acceptance of assurances about the safety of herbicides is also related to how one assesses risk. And ultimately, risk assessment involves values as much as scientific evidence.

The most thorough discussion we have come across regarding risk assessment of herbicides, and how to reconcile differing positions of industry, scientists, and the public, is provided by Comstock (1989). For example, he discusses the limitations (or even misrepresentations) inherent in a chart prepared by CAST (a research organization funded by its member agencies and the chemical industry) which compares "actual level of risk"

with "perceived risks" of pesticides as rated by college students, women voters, and business people. He indicates that there are many different types of risk; for example, chronic health problems which may not develop for some time, environmental harm from pesticide pollution, and others. Risk of death due from acute toxicity, in an actuarial sense, which is the basis for "actual level of risk" in the CAST chart is only one type of risk, but typically what the industry cites to support their assertion that pesticides are safe. Comstock also cites other possible side-effects of prolonged use of herbicides; for example, the creation of herbicide-resistant weeds.

Comstock further argues that: "The fact is we do not know what is the actual level of risk from chronic exposure to pesticide residues on food." He points out that the Environmental Protection Agency in the U.S. ranked "pesticide residues in or on foods" and "run-off and air deposition of pesticides" among its top four priorities. He cites industry spokespersons as acknowledging that there are some risks associated with pesticides, while at the same time arguing that these should be put into perspective. Comstock concludes: "There is an irony here. On the one hand, the chemical industry seems to want to assure us that there is little to worry about. On the other hand, it tells us that its biotech research wings are pursuing this line in order to find a new generation of safe chemicals. But which is it?"

Finally, Comstock discusses appeals to "balance" and "common sense", asserting that: "There is no 'common' sense among Americans in general or scientists in particular about the safety of pesticides. Both communities are sharply divided over the issue." Comstock says those who call for 'balance' and 'objectivity' in essence label anyone who disagrees as 'irrational', 'emotional' or 'impractical'. He says that industry appeals for 'reason' can be heavily weighted on emotion, and gives examples of this.

Others tend to agree with much of what Comstock says. In particular, there is widespread recognition that the question of risk cannot be answered by science. For example, Green (1984) discusses a number of factors related to risk acceptance (e.g., voluntariness of exposure, immediacy, relevance, and others) and points out that: "Methods which attempt to 'educate the public' as to the scientific benefits and costs of herbicide use are likely to be ineffectual because they do not address all the factors which affect risk acceptability."

Many of the informants interviewed through this study, such as Versteeg, Carrow, Radosevich, Caraher, and others, have expressed similar sentiments. They add that science cannot offer definitive answers to the public's concerns, that there is no scientific research which shows beyond a shadow of doubt that there is no danger from the use of herbicides. Indeed, Harris *et al.* (1992), in a report prepared for the Green Care Horticultural Association, an industry association, as a counter-attack to claims made by the urban anti-pesticide lobby, acknowledges that safety cannot be measured scientifically and is a political or ethical concept. They further acknowledge that: "Total hazard or risk cannot be completely eliminated from one's life. . . . The risk of the pesticide use must be weighed against the other health related, economic, and environmental effects resulting from the elimination of pesticide use."

Because ultimate decisions on risk acceptance are based upon values rather than science, it is appropriate for the public to be involved in the decision about what level of risk would be acceptable. For example, as Bolle (1971) stated: "Agency resource-trained professionals are, or should be, best informed in the physical or biological aspects. Theirs is the responsibility to be expert in these matters. But *only the public* is able to provide adequate and important knowledge and insights into the social or human aspects. The contribution of both provides the basis for problem identification." Shrader-Frechette (1991) has added: "We also need to recognize that laypersons are often more rational, in their evaluation of societal risks, than either experts or governments appear to have recognized."

One of the primary questions facing this review was the extent to which public beliefs are amenable to change with more or different technical information. We return to this question in Chapter 6, 7, and 9. But it is already apparent, as we have indicated, that the public tends not to place a high level of trust on those associated with the forest industry. Information perceived as coming from the industry, however "scientific" it may appear, is not likely to be seen as credible.

There is now general recognition that arguments in favour of herbicide use which are based upon science or safety are not likely to have much of an impact on the public. In this respect, the report by Harris *et al.* (1992) refuting the claims of the urban anti-pesticide lobby is not likely to change attitudes or beliefs in any respect. Radosevich, in an interview, *strongly* stated that conducting research to justify the regeneration of forests and the tree farm paradigm of forest management is counter-productive in today's society. Instead, he indicated, one must engage the public in jointly identifying alternative approaches.

5. Experiences in Other Jurisdictions

Many other jurisdictions, like Ontario, have experienced strong public opposition to use of herbicides. In some of these jurisdictions, public pressure has led to total or near-total bans on the use of herbicides, as well as to changes in forest management practices and the manner in which forest authorities now relate to the public.

In this section, we provide brief vignettes of experiences in a few other selected jurisdictions whose experiences may have some relevance for Ontario.

British Columbia

The B.C. government has recently developed a new strategy, described in *Planning for the Future*, to reduce pesticide use by 25 percent. The strategy is multi-sector, coordinated by the Ministry of the Environment and involving Forestry, Agriculture, and

other ministries as appropriate. There is an inter-ministry committee with stakeholder representation. Public education is a significant part of the strategy.

The Ministry of the Environment, which is responsible for the issuing of permits for pesticide use, has found that by giving the public an opportunity to get involved at the beginning, solutions acceptable to all parties can frequently be agreed upon and problems minimized down the road. Their new approach to the issuing of permits is to notify the public and stakeholders (e.g., environmental groups) when a permit request is submitted and ask for input. This input is then taken into account before a permit is issued. As a result the number of appeals against herbicide use permits has gone down (although there was an upturn in 1989, due to the sharp increase in herbicide use in the forest industry!). When appeals are filed, an attempt is made to meet with the appellants to discuss their approach in more detail.

B.C. Hydro, prior to the new B.C. government strategy, has had an objective of eliminating its dependence on herbicides. Over the last decade, it has reduced its application of herbicides by over 90 percent. The emphasis in their approach is biological control (e.g., discouraging the growth of the taller, undesirable tree species by encouraging the growth of other vegetation), supplemented by physical controls and the use of selective, site specific treatments, and site-specific applications of herbicides. The last aerial application of herbicides was in 1981. B.C. Hydro continues to search for alternative methods of vegetation management and is currently working on a vegetation management communications strategy. (For more information about B.C. Hydro's vegetation management strategy, see B.C. Hydro [1990, undated]).

British Columbia also has a very active Integrated Vegetation Management Association, which meets annually and publishes the proceedings of its conferences. We have reviewed the proceedings from the most recent conference (Integrated Vegetation Management Association of B.C. 1992) and found them to contain much useful information about new approaches to vegetation management.

U.S. National Forest Service — Pacific Northwest Region

During the early 1980s, because of the high degree of competing vegetation in the Northwest, the U.S. Forest Service was aerially spraying herbicides extensively on large acreages. When the public objected, the initial response was at first to ignore these objections, and then later counter objections with "facts". This means of interaction with the public was not effective. As a result, citizen appeals against the use of herbicides eventually led to a legal decision which totally banned their use.

In response to this legal action, the U.S. Forest Service set out to develop a new Environmental Impact Statement (EIS) using a radical approach to citizen involvement. The Forest Service joined forces with environmental groups such as the Northwest Coalition for Alternatives to Pesticides (NCAP) and representatives of the forest industry and drafted an EIS which was acceptable to all three parties.

The philosophy of the EIS is described in the *Record of Decision for Managing Competing and Unwanted Vegetation* (USDA Forest Service 1988). The EIS is based upon the premise that herbicides would not be banned but that their use would be reduced and tightly controlled. For example, the EIS specifies that an integrated pest management procedure must be followed in all cases and it identifies new processes for conducting vegetation management programs that are considering the use of pesticides including: early site-specific analysis, a five-step project design process, and formal monitoring, and it also specifies mitigation measures when herbicides are used.

The Record of Decision also indicated its full commitment to a decision process for vegetation management that includes full and ongoing public participation and information sharing, public participation in site-specific, project level planning, as well as the availability of readable, clear analyses and documents.

Pesticides, while now permitted, are clearly the last choice method for vegetation management, and their current level of use is drastically below former levels.

From our interviews with a number of people within the U.S. Forest Service, as well as with others familiar with its operation (including an NCAP representative), we understand that the new policy, for the most part, is working reasonably well. One initial problem was that field units of the Forest Service were not initially identified as stakeholders and needed to be included to a greater extent in the process. Information packages about each of the approved herbicides are now under development, with four completed to date (USDA Forest Service undated). *A Guide to Conducting Vegetation Management Projects in the Pacific Northwest Region* (USDA Forest Service 1990) has also been prepared, with a chapter on public involvement. As a result of the sharp reduction in herbicide use, the open process where the public can make its views known, as well as other factors, the public is now less concerned about the topic area.

We are also told that there is a shift in the philosophy of forest management, from commodities to amenities, and from tree farms to forests.

Beyond the Northwest

We understand that in addition to the Pacific Northwest Region, other regions of the National Forest Service are also taking a much more interactive approach in involving the public. For example, in Pennsylvania, the Sierra Club has been involved in working cooperatively with the Forest Service and industry representatives in developing the EIS for the Allegheny Forest. Since the new approach was implemented, only one appeal has been filed in this region.

Sweden

During the 1970s, opposition to forestry practices in Sweden led to strong public outcry against the use of herbicides. The Swedish forestry sector attempted to counter this opposition via an extensive multi-media campaign, but this counter-attack was not effective. A moratorium on the use of herbicides went into effect in 1979 and in 1980 the new Swedish Forest Act recognized that forest management should pay heed to nature conservation and other public interests, specifying environmental considerations to be implemented. A national policy in 1983 in theory permits the use of herbicides in restricted areas, but the authorization process is so complex and costly that they are used only in exceptional circumstances.

The forest industry in Sweden has redirected its efforts towards working within the new paradigm of environmentally oriented practices, rather than attempting to fight the will of the public. When the option of using herbicides was no longer available, the industry found that it could live with alternative methods of vegetation management, and especially alternative approaches to the marketing of wood products, for example, developing markets for "undesirable" species such as birch fibre. The Swedish forest industry is now recognized by environmentalists as being in the forefront for its conservation-oriented approach to forest management. (Sources: Breton and Tremblay 1990, Dunster 1990).

Other Localities

As Kimmins (1991) has observed, there is public concern about the environment and forestry practices throughout the western world. This is being translated into severe restrictions on current practices, in particular on the use of herbicides. Dohrenbusch and Frochot (1992), in a survey of vegetation management practices in Europe, found that: "The application of herbicides to control weeds in forestry is becoming more and more difficult. . . . Generally one observes a decrease in the importance of herbicides in Europe as a result of public opinion." Throughout Europe, there are either outright bans on the application of herbicides or their use is severely restricted. From one of our interviews, we understand that there is similar public sentiment in Australia, with greater support for biological control methods (even though some of these methods are as yet unproven).

In Germany (Dohrenbusch 1992), some states restrict herbicide use by law while others do not. But Dohrenbusch observes that the importance of herbicides already has been reduced and will decrease in the future, due to public concerns, objections by foresters, and concern over possible contamination of the soil and water sources. Even in areas where herbicides are permitted, most forest administrators advise against their use. Dohrenbusch, who personally feels that some use of herbicides is appropriate, discusses alternative methods of vegetation management currently in use and under consideration.

As we noted earlier, Saskatchewan (Leis 1985, Fitzsimmons 1985) had suspended application of herbicides in forestry, in response to public pressure. Alberta had done likewise. Although we understand that these restrictions have been relaxed, broadscale application of herbicides as they were used formerly are unlikely. Quebec has also undertaken a program to drastically restrict herbicide use.

Agriculture Canada's Revised Pest Management Regulatory System

Agriculture Canada has recently revised its approach to the regulation of pesticides, with a strengthened emphasis on public participation and on searching for alternatives compatible with sustainability.

Actually, movement in this direction started some eight years ago, in response to a commissioned study, which led to expansion of the Pesticides Information Division, a more visible process for pesticide registration, the creation of the Pest Management Advisory Board (chaired by Hajo Versteeg), and the establishment of the National Pesticides Information Service in 1985. The latter is a national toll-free service which provides answers to any questions related to the use of any form of pesticide. The Service acts as a clearinghouse for information about pesticides, their use, and alternatives. It also publishes "pest notes" on a variety of topics.

In 1989, Agriculture Canada appointed an independent multi-stakeholder twelve-person Review Team with the mandate to recommend a new approach to the regulatory process for pesticides. The report of the Review Team (Agriculture Canada 1990) forms the basis for the new pesticides regulatory process which has recently been announced and will gradually be implemented by the Pesticides Directorate of Agriculture Canada in consultation with stakeholders. Carrow (1991), who served as the representative of the forestry sector, described the comprehensive review as "a consensus-building process, involving all constituencies with an interest in pesticides — agriculture, labour, pesticide manufacturers, consumers, environmentalists, public health and those interested in alternatives to pesticides."

Examples of some of the changes listed in Agriculture Canada's formal announcement (Agriculture Canada 1992) include:

- A more open decision-making processes that will allow for greater public involvement and access to data;
- The establishment of a Pest Management Alternatives Office to reduce dependence on pesticides by adopting preventative and alternative approaches;
- Changes in legislation, and in availability of selected products;

- Setting up an Advisory Council, including representatives from health, labour, environmental, consumer, and industry groups to provide advice to the government on priorities, policies, and programs affecting pesticide registration.
- A Pesticide Management Secretariat to support the Advisory Council and to coordinate inter-governmental efforts in pesticide management.
- A statement by the Forestry Canada Minister that: "The development and adoption of environmentally safe alternative pest management strategies is a priority of all stakeholders in the forestry sector."

As Carrow (1991) indicates, the new regulatory system is designed to promote pest management, rather than simply make pesticides available. Both Carrow and von Schuckmann (1992) indicate that integrated pest management is one component of the new system.

Through interviews with a number of officials within Agriculture Canada as well as with others familiar with the process, we understand that the Pesticides Directorate plans to involve stakeholders early in the process, as well as increase opportunities for public participation. For example, its "Green Border" documents are published in three stages, with opportunity for public input at all stages: Announcement, Discussion Document, and Decision Document. We are told that the government wants to appear very visible in its process of involving the public.

Last year, the Directorate had Leiss (1991) conduct a workshop for its staff regarding how to go about public consultation and prepare a *Guide to Consultation Processes*. Representatives of key stakeholder groups, including representatives from the pesticide industry, the Canadian Federation of Agriculture, and the environmental sector were invited to participate in the workshop.

The new Pesticides Management Alternatives Office, which is in the process of getting established, is of particular interest. In many respects, its mandate, while broader than forestry, is similar to that of the VMAP. Its mandate, for example, includes research and promotion to reduce dependence on pesticides through identifying and promoting preventative and alternative approaches and IPM (see Agriculture Canada (1992) for the Office's terms of reference).

The Office is being set up as a private non-profit organization, at arms length from Agriculture Canada. It has an independent multi-stakeholder seven person Board of Directors, with two of its members representing the consumer and environmental sectors.

Some Summary Observations

Following are some summary observations based upon experiences in other jurisdictions discussed above:

- There is strong public opposition to widespread use of herbicides in forestry;
- If public concerns are ignored, they do not go away and instead escalate in both intensity and geographic focus;
- Attempts to counter public opposition to herbicides through public relations or one-way education strategies alone have not worked elsewhere;
- Public opposition in North America and Europe has been strong enough to force major changes upon government agencies and the forest industry in a number of jurisdictions;
- While severe restrictions on herbicide use are now in place in some jurisdictions, the general trend appears to be approval for limited use of herbicides, but only under restricted conditions, with Integrated Vegetation Management (IVM) strategies or equivalent becoming more common;
- Where forest managers have been forced to radically curtail their use of herbicides, new approaches have been adopted. These include: alternative methods of vegetation management, new ways of looking at and managing forests (e.g., for a broader range of forest values), and new approaches to the marketing of forest products, including the use of "undesirable" species.
- What is emerging in other jurisdictions is a process for meaningful public involvement which provides the public with a role in decision-making.
- The new direction involves getting together with critics, along with industry representatives. The experience in other jurisdictions suggests that this can frequently be done quite successfully, with compromises emerging which are acceptable to all parties.

6. Approaches to Public Education and Public Involvement

A. Limitations of Public Education: Does It Work?

Many informants point to limitations in the knowledge of many members of the public regarding forest management, including vegetation management. "Inform them and their attitudes can be changed" appears to some as the solution.

The logic in this argument is hard to refute. The reality, however, based upon the experiences of our key informants and citations in the literature, is that one-sided public education (or public relations) programs do *not* work. Furthermore, "education" is frequently used as an euphemism for coercion or indoctrination, in "making" the public understand, with no attempt to understand public sentiment.

For example, as Mater (1977) has stated:

"'We have to educate the public.' . . . This statement is the ultimate escape from responsibility in public involvement. Translated it says, 'We must manipulate the public to understand the situation as we see it.'"

Bolle (1971), in talking about the controversy in the Bitterroot National Forest, indicated that some professionals viewed public concern as a failure of the Information and Education Division to educate the public and quell any concerns.

As Mater (1992) has summarized:

"The forest industry has repeatedly maintained that 'the public has to understand' or that 'the public must be made to realize'. As we have painfully learned, the public does not *have* to understand anything and even if and when it understands, agreement does not necessarily follow."

Mater (1977) also discusses some widely held misconceptions, pointing out that:

- The facts don't speak for themselves.
- Education does not assure wise decisions.
- Knowledge itself imparts no power.
- A little knowledge is not a dangerous thing.
- Understanding does not guarantee agreement.

Even with the facts, people still may — and do! — disagree.

It is clear from the literature, as well as through reports of key informants in a variety of jurisdictions, that one-sided public education attempts to turn around public sentiment against current forestry practices have been singularly unsuccessful. To reiterate a couple of examples, Mater (1992) has observed that in the United States: "The industry has made a large investment in public relations and education . . . with little success in changing the negative public perception about the forest industry." In Sweden, Breton and Tremblay (1990) pointed out that the massive amounts of money spent by the forestry sector in making and defending the case for use of herbicides, using a variety of media, had no effect, leading to a ban. Similarly, previous education activities by industry and the U.S. Forest Service in numerous settings had no impact on public opinion. If anything, these attempts at "education" destroyed whatever credibility the forest industry had had, and firmed up public opposition to current practices (e.g., Mater 1992).

Long-Term Education Approaches

Some of our informants, while recognizing the limitations of education to the public in the short term, suggest that the emphasis should be on long-term education directed at school-aged children. It is hard, intuitively, to disagree with this approach or to see how it can do any harm.

There has only been limited research, however, assessing the long-term impact of forestry education programs. What has been done suggests that one should only expect a modest impact as a result of this education.

We have only been able to identify two longitudinal studies examining the impact of school programs: Merchant and Williams (1985) who explored the impact over six years on knowledge and attitudes of the Petawawa Resource Education Program (PREP) on grade 6 students, and Burrus-Bammel (1978) who examined the impact of a similar program oriented at teens.

In both cases, there were significant changes in both knowledge and attitudes. There was, however, no relationship between attitudes and knowledge. In other words, an increase in knowledge did not necessarily translate into more positive attitudes. Merchant and Williams (1985) caution that: "Students need opportunities to apply and experience the knowledge they have gained if they are to integrate it into their lives in the formation of strong attitudes."

One of the members of our study team, as an outdoor educator, has always questioned the impact on knowledge and attitudes of children taking part in a two and a half day visit to a Forest Centre where she had served as Coordinator. What she really hoped for was one "memorable moment" that would spark a child's interest and have a positive effect on the environment at some later date.

There can also be other limitations to school-based education programs. For example, while these programs can discuss forestry values, practices, and products in general terms, it would be difficult for them to get into specific issues, such as vegetation management and the pros and cons of different approaches, in any detail. Also, some of our informants, while generally in favour of school-based education, expressed concern over teachers, who they view as frequently uninformed or otherwise unsympathetic to the practical concerns of the forest industry, and the messages teachers such as these may be giving to their students.

Social Marketing — a New Direction

There is a general movement away from the use of education or promotion approaches to adoption of a social marketing strategy for social programs wishing to influence public beliefs and behaviours (e.g., as in health promotion).

Social marketing involves first identifying discrete subgroups or "segments" of the general population and then finding out as much as possible about the segments you feel that you have a real potential to influence, including their beliefs, values, interests, concerns, and desired benefits. Social marketing, rather than attempting to "sell" a concept or belief or preconceived message, involves starting with the concerns of the audience and showing how what one has to offer can be of benefit from *their* perspective. Instead of trying to convince the public to "buy" your message, in social marketing you attempt to show how you can meet the public's needs and expectations. In education, we say: "If only they knew more about this." In marketing, we say: "If only we knew more about them."

Social marketing bears many similarities, but also a number of differences, to product or commercial marketing. One key difference is that "participation" of the public is a key part in the development and implementation of a social marketing strategy.

There is very little discussion about social marketing in the context of forestry. Mater (Mater *et al.* 1992) discusses marketing approaches in general, and touches upon social marketing considerations in a recent paper (Mater 1992). *Health Promotion* (1988/89) devoted a theme article to the topic. Kotler (e.g., Kotler and Roberto 1989) is considered the leading spokesperson in the area. The Ontario Ministry of Health, Health Promotion Branch, has developed a workshop on social marketing and delivered it across the province.

B. Public Involvement: The "Whys" and the "Hows"

There is an overwhelming consensus throughout the literature, as well as among our informants, that a public involvement strategy is required in order to address public concerns regarding forest management issues such as herbicide use. For example, Bachelard (1979) indicates that: "Public participation is today's clarion call." There is general recognition that "education" or public relations activities are insufficient in and of themselves, and as discussed above, that they do not work. Public involvement strategies can incorporate educational and communication approaches. But they go much further than purely one-way presentation of information. With public participation, unlike other methods, a sense of ownership and commitment can emerge.

Public involvement, as Rich (1972), for example, defined it, "means participation by the public in decisions." Behan (1988) points out that this "is a democratic, personalized, dynamic, interactive process of bargaining, negotiation, mediation, and give-and-take" and is distinct from "consultation", where managers seek responses to "initiatives developed or modified in-house." It is worthy of note that public participation in public policy issues is broader than just forestry within Ontario. Within forestry, it is a worldwide, rather than an Ontario-specific, phenomenon.

In Agriculture Canada's Guide, Leiss (1991) identifies three essential criteria of public involvement²:

- A process of two-way communication that occurs in the context of a structured process.
- Intended to produce a specific result or end-point, which should be formulated by the responsible agency and communicated to all participating groups at the beginning of the exercise.
- It involves power sharing between the government and the people it serves through a democratic process of exchange.

We have identified a number of guides and articles which provide guidance for establishing and carrying out a public participation process in forestry. Probably the most useful guide we have come across is Mater's (1977), which describes a variety of different public involvement scenarios and communication techniques, complete with numerous examples. The Agriculture Canada Guide (Leiss, 1971), as well as the Pacific Northwest Guide to Conducting Vegetation Management Projects (USDA Forest Service 1990) are also quite relevant.

Some other useful resources which provide guidance for going about public consultation include: Carrow (1991), Bolle (1971), DowElanco (1990a, 1990b, undated), Gale (1973), Knopp and Caldbeck (1990), Lee (1991), Ostheimer (1977), Hendee *et al.* (1974), Susskind and Cruikshank (1992), Ontario Ministry of Agriculture and Food (undated); Tanz and Howard (1991), and USDA Forest Service (1988). Numerous other sources speak of the importance of public involvement.

Some key points identified in the above sources for carrying out public involvement include:

- Engage the public, on a proactive basis, right at the beginning, before detailed plans are formulated, before polarization has a chance to occur (i.e., don't hope no one will notice or wait for a crisis);
- Public involvement means giving the public real, rather than token, power in the decision-making process;
- View the public as a partner, with a legitimate role to participate and with expertise to contribute;
- Tell the unvarnished truth;

²This Guide uses the term "consultation", but in the way most others reserve for "participation" or "involvement".

- Do not patronize people;
- Take a personal approach to contacting and communicating with people;
- Be open to compromise;
- Avoid the appearance of manipulation;
- Work with your critics early on (Mater (1977) suggests going for the most, rather than the least, opposed and work with them; you will hear from them eventually anyway);
- Meet the public on their own turf;
- Allow for meaningful involvement (e.g., consider funding for travel and per diems or honoraria for participation at meetings);
- Make whatever information you produce clear and readable (pretest it first);
- Assist professional foresters in developing skills for interacting with the public.

We recognize that these points may appear a bit abstract. In the final component of this study, we will make recommendations for a public participation approach most appropriate for VMAP.

As a final comment, we note that public involvement can be literally hands-on. For example, Dare (1985) describes a situation where citizens opposed to the use of herbicides volunteered to do hand mulching instead. We are aware (Dohrenbusch 1992, pers. comm.) of a similar approach used in the Luberon region in France.

C. The Changing Nature of Environmental Organizations

Environmental groups, as Griss (1992), for example, has indicated, are "turning away from rhetoric and confrontation toward more cooperation and partnerships." As he continues: "Confrontation over certain sites and techniques is inevitable and will continue. However, if good working relationships can be established on the broader issues, then it will be much easier to resolve the conflicts."

There is other evidence of this change of direction. For example, a newspaper account (Lush 1992) of the recent Summit '92 forest industry conference in Vancouver reported that: "Representatives from the disparate sectors agreed that they need a more cohesive approach. They appeared ready to move toward each other, to give up some options, to compromise." The same article quotes a forest industry executive as saying: I came away with a feeling that things can be done. I don't feel that the parties are all that far apart."

Patrick Moore, a founder of Greenpeace, now works together with forest industry representatives. For example, he worked with an industry-funded organization in the development of principles for sustainable forestry that have been endorsed by 16 chief executive officers (Williamson, 1992).

A cogent analysis in the *Globe and Mail* (Rusk 1992) discusses the transformation of environmental groups. It points out that environmentalists are now realizing that they have largely succeeded in sounding the alarm and they now have to play a role in developing solutions. They are moving towards a more cooperative, collaborative approach, coupled with higher levels of technical knowledge and expertise.

There are still dissenters; for example, a young activist who threw a cream pie at the president of MacMillan Bloedel when he was sitting next to Patrick Moore. And as Rusk (1992) indicated, environmental groups are facing severe financial constraints as they are finding it more difficult to raise donations, partly due to the recession and also because it is harder to raise money for working cooperatively than to fight the system.

As we have discussed before, cooperation is most likely to occur within small multi-stakeholder working groups, in a non-confrontational environment. In this context, members do not need to worry about how their public image is portrayed. They are most likely to roll up their sleeves, jointly review the available data and alternatives, and arrive at acceptable compromises.

7. A Paradigm Change — and Its Implications for Forestry

It is apparent that a paradigm shift is under way in forestry, reflecting a different set of values about how forests are to be managed. Many sources touch upon this phenomenon in various ways, with a surprising number specifically referring to "paradigm shift". The emerging paradigm has significant implications for all aspects of forestry, including newly emerging forest products, new methods of forest management, as well as for all aspects of silviculture, including vegetation management.

It is worthwhile reviewing what is meant by a "paradigm". The concept was first developed by Kuhn (1962) in his influential book: *The Structure of Scientific Revolutions*. Kuhn argued that scientific knowledge, rather than developing incrementally, instead progresses in stages from one paradigm to another. Different paradigms represent incommensurable ways of seeing the world, different ways of deciding which theories are or are not acceptable, which methods are considered "scientific", even which observations, experiences, and "facts" are accepted as legitimate.

New ideas, methods, and facts which are outside the paradigm of "normal science" are rejected and do not pass peer review. Proponents of new perspectives inconsistent with the dominant ideology, as a result, are frequently forced to publish their work elsewhere. Proponents of different paradigms tend to speak past each other, without an agreed upon

base of understanding. Shifting from one paradigm to another is always painful, sometimes impossible for people who have a lot invested in the old way of looking at the world and practising science.

In the context of forestry, Pease (1992) suggests that a paradigm shift is under way, citing Legg: "When a paradigm shifts, everybody goes back to zero. The more you have invested in the old paradigm, the more resistant you are to change. How do you know when it's time to change? There will never be enough data to tell you it's time to make a switch."

The new paradigm in forestry has been described and suggested in various ways. Some of its more frequently mentioned elements include:

- A central focus on environmental and ecological concerns.
 - Sustainability is one component of this focus.
 - Introduction of artificial substances, such as chemicals, to the forest is generally not viewed as compatible with this vision.
 - For some people, this environmental vision is far broader, for example espousing radical changes to the organization of society, changes in lifestyle and patterns of consumption so that fewer wood products (e.g., via reduced use of paper as well as through more radical changes) will be needed.
 - For some, the environmental or ecological perspective can go as far as to incorporate a vision of forests free from human meddling.
- A movement from tree farms to forests, incorporating biodiversity and making use of natural regeneration as much as possible.
- A broader view of forest values, shifting away from a primary focus on commodities such as timber production to amenities such as recreation, protection of fragile areas, watershed management, and protection of animal and plant life.
- A different approach to the marketing of forest products, making use of different wood products, e.g., composite materials, medicinal, decorative and food stuff products, and greater use of marginal wood.
- Different management and harvesting techniques, away from clearcutting to selective cutting, increased use of the understorey, and use of less desirable species.
- Active public involvement in decisions regarding forest management, involving social values as well as considerations of science.

- Combining forestry objectives with those of other social areas.
 - For example, interest in more labour intensive approaches to vegetation management has been expressed in areas such as the Pacific Northwest, and Saskatchewan, which also address social welfare objectives of providing employment.

Some are very articulate in expressing their philosophy. For example, in an article entitled *Disagreeing on the Basics*, Taylor (1992) contrasts two competing world views: the Expansionist World View, with a focus on "wise management", with the Ecological World View, with a focus on "preservation". Gregg (1992) discusses implications of differing views of the human/nature relationship, arguing that one must go beyond science, taking into account values in forest management practices.

In a comprehensive, wide-ranging article, Dunster (1990) discusses the adequacy of various conservation strategies, arguing for an approach which goes beyond mere fibre production. He discusses different variations of this view; for example, whether specific tracts of forests should be used for fibre production at all, as well a perspective which accepts the need for timber harvesting, but in a different manner. Mitchell (1992) suggests moving away from the concept of a 'working' forest to that of a sustainable forest, with a priority to biological diversity where herbicides do not have any role.

Our suspicion is that most members of the public have not thought in depth about their philosophy and would have trouble articulating it in any detail. But concern for the environment, with implications for compatible forest management practices, and a broader view of forest values and benefits which go beyond timber production appear to be primary considerations.

Are these values open to change? No one can say for sure. Public values can and do change over time. But as all the evidence we have cited indicates, significant herbicide use does not appear to be compatible with the dominant values and beliefs of the public.

Significantly, forward thinkers within the forestry sector itself are now acknowledging that, rather than fighting the public, it is more productive to change practices to reflect public interest. For example, as we indicated earlier, Zimmerman (1992, Olive 1992), has advised his forest industry colleagues that environmental concerns are here to stay.

Mater (1992) says that: "Sooner or later, public opinion will force the forest industry to adopt the marketing paradigm, which calls for changing the product as necessary, rather than attempting to win public acceptance by redefining it. If it is sooner, the industry is in control." In an interview, she said that rather than fight the battle of proving that chemicals are safe, accept the trends to 'softer' forests values and start harvesting the understorey. The purpose of her latest book (Mater *et al.* 1992) is to provide guidance for the forest industry on how to market forest products within the new paradigm and be competitive.

At a recent forest industry conference in Vancouver (Lush 1992) information was presented which indicated that the industry in British Columbia will be in serious trouble if it continues its current practices. It could, however, be very competitive, if it adapts to the new paradigm, including thinning stands of trees as they grow and using more of the marginal wood, and changing its products away from low-value commodities such as two-by-fours to composite products and other engineered wood products.

We recently received a greeting card which states: "This card produced from a sustainable Scandinavian forest." This is an example of marketing within the new paradigm.

Von Schuckmann (1992), in a presentation discussing implications of public concern and the changing paradigm, indicates that these changes will have a profound influence for vegetation management. She says that integrated pest management is here to stay and identifies three major trends in pest management:

Reactive chemical control	----->	Long term integrated pest management strategy
Pest control (narrow problem focus)	----->	Environmental management (ecosystem approach)
Large scale broadcast applications	----->	Ground-based target-specific applications

Carrow (1992) similarly argues that "the focus on traditional products from our forests is too narrow for the future." He (1991) indicates that, given the position of the public, it would not be wise for timber supply models to assume the general availability of aerial spraying of herbicides. The Record of Decision in the Pacific Northwest (USDA Forest Service 1988) takes into account elements of the new paradigm in laying out its new approach for vegetation management.

Recognition of the new paradigm is increasing within the political level in Canada and Ontario. For example, the Canadian Council of Forest Ministers (1992) recently indicated its commitment to sustainable forests. The Ontario government also has a new focus on sustainable forestry and on forest values that incorporate but go beyond timber production. For example, *Branching Out*, the newsletter of the Ontario Ministry of Natural Resources (1992) indicates:

"Ontario used to have a forest management philosophy concerned with producing enough timber to sustain industry. It is now in transition to one that embraces the health and vitality of the whole forest.

Sustainable forestry is an important program and is the first step in changing our approach to managing the forest from timber production as a single focus, to a more integrated and holistic direction."

Some elements of the new paradigm, such as the harvesting and marketing of new forest products and the shift to broader forest amenities, may not appear to be directly relevant to vegetation management. But they will ultimately have significant implications for all aspects of silviculture.

8. A New Role for Forestry Professionals

Foresters used to be left alone by the public to make their own decisions about how best to manage the forest. They could rely upon their scientific and technical expertise in deciding which vegetation management practices would be most appropriate for given situations.

This situation no longer applies. The public now expects to have its values considered, and to play an active role in making decisions about how the forest is managed. It has clearly indicated its displeasure with many past practices, including widespread use of herbicides. Ignoring the public, according to many of the sources we have cited throughout this paper, has probably led to even more restrictions than would have resulted if the public had been allowed to participate at an earlier stage.

As Mater (1992) has indicated, the public's negative perception of the forest industry is so firmly entrenched that it is now questioning the motives of actions, such as the recent ban on clearcutting by the U.S. Forest Service, that one would expect to have received public applause. Both those who applaud the situation, as well as those who decry it, acknowledge that political factors are now at least as important as technical ones in making forest management decisions.

But many people within the forestry profession are still clearly unhappy about the new paradigm and are resisting the need to involve the public in a meaningful way. There are a variety of references in the literature about the paternalism and/or contempt of some foresters regarding the public and what they think. Many of the key informants interviewed in this study emphasized this point and identified it as a major need to be addressed.

For example, Kimmins (1991) stated that the rhetoric used in the past by forestry interests to defend the status quo must be replaced by an increasing willingness to accept informed public input and to compromise on the basis of multi-lateral negotiations. Knopp and Caldbeck (1990) state that: "Foresters in their work as professionals need to develop greater understanding of and tolerance for conflicting views of what the social role of forests ought to be." The Pacific Northwest Guide for working with the public (USDA Forest Service 1990) states:

"In the past, people using herbicides were accused of being insensitive to neighbours, unwilling to acknowledge problems, opposed to regulations, closed to dialogue, and unwilling to discuss information about health and environmental risks. The consequences of this attitude, or perceived attitude, are well known."

Bolle (1971) stated that: "The professional forester apparently accepts certain assumptions which would give him certain fundamental truths believed by him to be beyond the comprehension of the ordinary mortal." He, and others, assert that many foresters feel that if the public does not agree with them fully, then they are wrong, and that the purpose of education is to convince the public of the appropriateness of the forester's plans. As Mater (1977) and others indicate, this is not education but rather manipulation and does not work. Environmentalists such as Gale (1973) and Griss (1992) indicate that the lack of respect and interest in learning about the perspectives of environmental groups, coupled with an unwillingness to listen, often force these groups into confrontational positions, when they would be more than happy to sit down and work together.

We do not feel, however, that it is constructive to blame forestry professionals for past practices. The demands on the profession have changed drastically. New approaches and skills are now required. As Knopp and Caldbeck (1990) stated: The forestry profession needs to develop skills for dealing with people to add to the skills used for dealing with trees." The challenge is to find ways of assisting forestry professionals to develop these people skills.

We note that the role of the expert is changing in other areas of public policy as well as forestry, for example in health care. Experts in other areas are just starting to learn about the need to involve members of the public in making decisions. They are learning how to contribute their special expertise and knowledge in a constructive manner, recognizing that technical expertise is insufficient, in and of itself, and that the public has a right to be involved in decisions concerning them.

This new process is still under development. It is painful at first for some professionals to accept that they need to learn to apply facilitation and public involvement skills, and to use different ways in applying their expertise.

This is a significant task. But, as we have discussed, it is starting to happen in other jurisdictions, such as the Pacific Northwest, Sweden, and Agriculture Canada. The broader corporate world is also faced with similar challenges, with a recognition of the need for new ways of looking at the world and of doing business becoming increasingly common (e.g., Xerox's refocusing and IBM's recent restructuring). Training and support to employees has been a key component of the strategies of other organizations which have successfully accomplished this transformation.

What is required is a process which provides guidance, direction and support to forestry professionals both in how to go about working with the public and how to review current

practices in order to bring them in line, as necessary, with the new paradigm. This has implications for the education and training of people working at all levels within the forestry profession.

9. Summary and Conclusion

Following are some tentative conclusions arising from this component of the research.

A key question for this study was the extent to which negative public attitudes regarding the use of herbicides are amenable to change with the provision of more technical information. There is substantial evidence which indicates that, for the most part, more technical evidence, in and of itself, will *not* make any difference. In part, this is based upon a different set of values regarding forests for which widespread use of herbicides are incompatible. The public takes a different approach to the assessment of risk than do many scientists. And they do not appear to trust the credibility of those associated with the forest industry or perceived as speaking on its behalf.

True, much of the public may be operating on only partial information. But even people who are informed do not necessarily agree with current approaches to vegetation management. And, according to numerous sources, attempts in other jurisdictions to change public attitudes through one-sided public education or public relations approaches have not been successful. As a result of public pressure, herbicide use has either been severely restricted or banned in numerous jurisdictions.

As a result of the above, a number of leaders within the forestry sector (e.g., Zimmerman, Wallinger, Carrow, Mater) now say that rather than trying to convince the public of the appropriateness of current practices, the forest industry should acknowledge the views of the public and adapt to the new paradigm. According to some sources, problems encountered to date where changes have been made are not quite as bad as anticipated. Indeed (e.g., Mater *et al.* 1992), new markets are being discovered for forest products produced under the new paradigm.

The consensus arising from the literature and from experiences in other jurisdictions is that there is a need for an emphasis on public involvement rather than on one-way public education. Public involvement means giving the public a meaningful role in decision-making. People skills are becoming as essential as technical skills for foresters.

The above picture may appear depressing to professional foresters used to operating out of the public eye. To be sure, it does represent a significant departure from past practices. The experience in other jurisdictions, however, is that public involvement frequently is a positive experience for all parties.

And some surprising compromises can emerge when environmental groups are actively involved in the decision-making process, right from the beginning before a crisis

situation has developed. In a non-confrontational atmosphere, multi-stakeholder agreement is possible, including approval for limited use of herbicides.

What does the above discussion mean for the VMAP? Following, in our view, are some emerging implications which will be explored during the balance of the study:

- The VMAP, for the most part, appears to be well positioned, given the new paradigm and public views. However, some minor readjustments; for example, in how it engages and communicates with the public, may be required to ensure that the public sees it that way.
- The strategy for public education should be based upon various forms of public involvement. Within a public involvement context, some means of educational activities, using personal communications and community development techniques, may also be possible.
- A priority area appears to be education of forestry professionals, about the need to engage the public, how to go about doing this, and about the need to rethink and modify many current practices in order to bring them into line with what the public is willing to accept.

PART B:

**REPORT OF FOCUS GROUPS REGARDING
HERBICIDE USE IN FORESTRY**

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1. Introduction

Part A identified what is known about public attitudes regarding herbicide use in forestry, and about means of public education and involvement. The report also documented practices and experiences in other jurisdictions. This was based upon a comprehensive review of the scientific and popular literature, as well as a number of relevant unpublished documents, and information obtained from key informant interviews.

The purpose of Component B of the study was to explore views of Ontarians more specifically on these topics. The study involved focus group interviews with representatives of the interested public and the organized public in Ontario, as well as with a small number of professionals, in order to learn more about their views. This report presents and discusses the findings from this part of the study.

Participants in the focus groups were given an opportunity to discuss their views regarding the following broad topic areas:

- Knowledge of herbicides and their use;
- Attitudes about herbicide use;
- Acceptable/unacceptable conditions for herbicide use;
- Acceptable alternatives to herbicides;
- Interest in involvement regarding the future use of herbicides in forest regeneration;
- Advice for OMNR about working with the interested public on herbicide use;
- Other related issues.

2. Methodology

Twelve focus group discussions, involving a total of 114 participants, were conducted across Ontario over the period from November, 1992 to January, 1993. Ten of these were with members of the "organized public" — i.e., representatives of environmental and other interest groups, and with the "interested public" — individuals who have expressed some interest in forestry issues; e.g., teachers, woodlot owners, members of outdoor recreation groups. While the major purpose of this study was to obtain the views of the public, two groups were also held, for comparison purposes, with professionals, including foresters and biologists. Table 1 shows the locations of these groups, as well as the numbers of participants in each. Appendix 3 identifies the

organizations represented, where applicable, or backgrounds of participants, in each of the groups.

Table 1. Location and number of participants in focus groups included in this study.

Location	Organized Public	Interested Public	Professionals
Toronto	4		
North York	6		
Lindsay	12	8	
North Bay	15	6	9
Thunder Bay	8	9	
Carleton Place	12	11	14

All groups were organized by regional or district OMNR staff, who served as hosts, except for the Toronto and North York groups, which were arranged by the VMAP Education Coordinator. In accordance with guidelines which were provided, each host recruited participants drawn from representatives of the organized and interested publics known to them or their office. It should be noted that the exact definition of "organized" and "interested" publics varied from setting to setting and there was some degree of overlap across the two types of groups.

Each focus group involved a small number of no more than 15 people engaged in a "focused" discussion under the guidance of an experienced moderator. This involved questioning and discussion under the broad topic areas listed on page B-1. Appendix 4 contains the moderator's guide used for the groups.

Following each focus group, the moderator drafted a detailed summary of the discussion which took place, based upon extensive notes taken during the group. These drafts were reviewed for accuracy and omissions by an OMNR staff person who sat in on the groups as an observer and also took notes (in one case, there was no OMNR observer but two co-facilitators), and modified as necessary. In some cases, the initial draft was prepared by the observer and reviewed by the moderator. Summaries of each discussion were also sent to group participants who were given an opportunity to comment.

A thematic analysis was then carried out. This involved grouping comments from across all groups into common themes, looking for similarities and differences in responses.

Focus groups represent a commonly accepted form of qualitative data gathering to find out about public attitudes and beliefs. They have long been used in market research and represent an increasingly common methodology in social science research and program evaluation.

Focus groups are frequently used to guide major decisions in other public policy areas. In particular, they are a very commonly used method for learning about public attitudes to existing and contemplated government initiatives. They also play a major role in influencing the direction of political campaigns and marketing decisions in the private sector, frequently with multi-million dollar implications.

As Krueger (1988) indicates, focus groups are particularly effective in providing information about *why* people think or feel the way they do. Patton (1990) points out that the focus group approach was developed in recognition that peoples decisions are often made in a social context, growing out of discussions with other people.

Thus, focus groups provide perhaps the best means for exploring attitudes and beliefs in depth. It is possible to probe how firmly held beliefs are, to explore the thought processes behind these, and to get a sense of to what extent these views might be subject to change in response to new information or to views of others. They frequently can provide an opportunity to explore reactions to possible interventions or unanticipated issues, such as responses which may emerge during the course of a group discussion.

As with any methodology, focus groups have their strengths and limitations. Their reliance on group process provides a closer simulation to decision-making in real life than do many other methods (Patton 1990). The group setting makes it easier to draw people out and to identify the strength and basis of their feelings than in other contexts. It provides an opportunity for participants to react to statements of others and to change or modify their own views. Statements of participants can build upon those of others, providing an opportunity for ideas to emerge which otherwise would not.

But the group process also has some limitations. There is a potential for the views of some participants to be influenced by those of others. Especially in large groups (e.g., over 10), it can be difficult to involve all participants equally in the discussion. It is not possible to ask specifically about the views of every participant about every single question of interest. The skill of the moderator in controlling the direction of the discussion is also important. For example, it is important to minimize tangents which are off topic, while at the same time making participants feel that their views are important and giving them an opportunity to raise considerations which they feel are relevant.

A major strength of qualitative over quantitative methodologies is that they permit respondents to raise points which were not identified in advance. But this makes analysis more complex. Focus groups involve a "focused" discussion designed to obtain useful information, rather than responses to specific questions as on a questionnaire. To

some extent, the nature of the questioning follows the direction of the discussion and thus specific questions asked vary from group to group.

One limitation of focus groups is that quantitative analysis is not appropriate. In part, this is because, by design, identical questions are not asked in every group, and individuals cannot be polled for their views on every single question. Individual views can change over the course of the group session. Focus groups also seek out qualitative insights, observations, and suggestions which are not susceptible to quantitative analysis. Individual comments can sometimes be valuable in and of themselves, so "counting", even if possible, could be misleading.

Furthermore, in a focus group, everything that takes place is "data". This includes interaction of the participants with the moderator and with each other and may include what happens before the formal beginning and after the formal conclusion of the group. Non-verbal communications can be particularly relevant. These can include, for example, nodding in agreement with statements of others, laughter, mutterings, as well as evidence of agitation, intensity of feelings and/or lack of interest.

In addition, participants selected for focus groups represent an "intentional" rather than a random sample. Total numbers are relatively small. Focus groups, especially when they produce consistent findings, can be very useful in identifying general trends and explaining the reasons behind viewpoints. But even where it is possible to count the numbers of participants with various viewpoints, it is not appropriate to generalize statistically to the larger population. In particular, one must be very careful in making comparisons from site to site when each one is represented by just a couple of groups.

For all the above reasons, it is neither possible nor appropriate to report focus group findings in terms of specific percentages. One can, however, use terms such as "most participants", "a few", "many" (Krueger 1988).

Nevertheless, focus group findings can be very powerful. The reasons for viewpoints emerge during focus groups making it easier to understand what these responses mean than with quantitative methods such as surveys. This adds to their validity. Statements made by participants in focus groups can be believable as they are, without requiring transformation or abstraction as with quantitative data, and thus have considerable face validity. When successive focus groups tend to confirm the patterns of responses of earlier groups, one can place credibility in the findings which have emerged.

In summary, focus groups:

- Are not designed to provide quantitative results;
- Can identify the overall direction of feeling and beliefs on the topic at hand, the overall patterns of responses, key differences, and the reasons for these, especially

when multiple groups have been conducted and a consistent pattern of responses emerges;

- Can give a sense of the strength of feelings and views and whether they may be open to modification;
- Are especially useful in obtaining key insights, suggestions and ideas;
- Can identify issues and factors which participants feel are important and relevant; these are sometimes more important than the initial questions;
- Can produce findings which have strong believability and face validity;
- For all the above reasons, focus groups are one of the most common methods used in soliciting views of representatives of the public and special populations regarding current public policies and ideas about alternative approaches.

Some Specific Cautions

The primary purpose of the focus groups was to obtain views from representatives of the organized and the interested publics of Ontario. Two additional groups, one in North Bay and the other in Carleton Place, were held with professionals, including foresters and biologists.

The purpose of these professional groups was to get a sense of the range of views of professionals on the same issues posed to participants in the other groups, and to get a sense of similarities and differences between views of professionals and those of the organized and interested publics. Two groups, in just two settings, are *not* sufficient to accurately reflect the views of all professionals. Thus, the data regarding professional views should be treated with caution.

3. Findings and Implications

A. Introduction

This chapter presents a summary of findings from the focus groups along with a discussion of implications. Appendix 5 presents the findings in detail. Some of the ideas from the focus group participants may be unclear; others may not be realistic. However, the findings set out below represent the views expressed by focus group participants.

This chapter also discusses a number of ideas and suggestions for action that were either suggested by different focus group participants themselves or are based upon statements

made in the groups. Most of these are directed at OMNR, in general, and in some cases to VMAP.

Part C, which follows, provides a planned strategy and recommendations for addressing the findings and implications from the Component A and B research.

B. Awareness of Forest Regeneration

Findings

- Most participants in all the focus groups were aware of the process of forest regeneration; e.g., cutting forests, replanting tree seedlings.
- A few participants, particularly those in the organized public groups, specifically commented on the natural regeneration process and implied that natural regeneration was a positive process but artificial regeneration, necessitated by practices such as clear cutting was not. However, the participants' full understanding of the natural regeneration process was not probed in detail.

Implications

- During future interactions with the organized and interested public, OMNR should clarify their knowledge of and views about the natural regeneration process in greater detail.

C. Awareness of Herbicides

Findings

- Most participants in all focus groups were aware that herbicides are used to kill vegetation that interferes with the growth of replanted tree seedlings.
- The participants from the interested public noted the following sources of information about herbicide use in forest regeneration:
 - newspapers
 - publications from groups such as the Federation of Ontario Naturalists, camping and canoeing organizations, etc.
 - high school studies
 - Canadian Geographic magazine
 - television documentaries
 - discussions with OMNR/forest industry staff
 - OMNR - past work experiences

- Participants in the professionals' focus group were more familiar with herbicide use in forest regeneration than most participants in the other groups.
- Most of the participants from the interested public and some from the organized public did not know that herbicides are a form of pesticide. Very few participants of the interested and organized public focus groups commented that specific herbicides kill specific vegetation.
- The participants from the interested and organized public commonly interpreted the term pesticide as meaning a chemical substance which kills animal "pests"; e.g., insects. However, more members of the organized than interested public understood the relationship between herbicides and pesticides.
- Professionals who participated in the study were aware of the differences between herbicides and pesticides.

Implications

- When OMNR interacts with the interested or organized public on the subject of herbicides or pesticides, it should clarify these terms in easy-to-understand language and address misconceptions about pesticides.

D. Awareness of Herbicide Use in Forest Regeneration

Findings

- Most participants from the interested public were aware that they have a limited knowledge of herbicide use in forest regeneration. A few members of the interested public, however, were more confident in their level of knowledge about herbicide use and forest regeneration due to their studies or work; e.g., teachers who teach forest-related programs and previous employees of OMNR.
- More participants from the organized public than interested public had greater interest and knowledge about herbicide use overall and, in some cases, herbicide use in forest regeneration. Some participants from the organized public expressed greater interest in the subject due to their environmental concerns and/or their interest in Ontario forests. For example, one participant was a member of a pulp and paper workers union that had formally stated its opposition to herbicide use.
- A few people in the interested public, such as woodlot owners or outdoors' enthusiasts, knew about herbicide use due to their past experiences. For example, some indicated they have seen harvested and replanted forests.

- Most professionals had some or extensive knowledge of herbicide use in forest regeneration.
- Some participants from the organized and interested public said they would like to know more about OMNR's involvement in forest regeneration and use of herbicides.

Implications

- OMNR should respond to the participants' expressed interest by providing information about forest regeneration, vegetation management, and herbicide use. Some possible venues are newspapers, newsletters/publications from groups like the FON and camping or canoeing organizations. Information releases should include an OMNR contact phone number and address to enable the target groups to telephone or write in comments.

E. Understanding of Herbicide Application Methods

Findings

- Some of the participants from all groups commented on methods of application of herbicides in forestry such as aerial application, tanker, back pack, stem injection, and stump applicator.
- Some participants expressed concerns related to the application of herbicides in forestry. For example, aerial spraying was discussed by some participants from all types of focus groups. A few participants from the interested and organized public commented that aerial application was common in larger areas in northern Ontario. Many participants from the organized and interested public seemed to be very concerned about the safety of aerial spraying (drift, missing the target, safety procedure adherence in isolated north) and some participants from the organized public expressed concerns about the need for broadcast aerial applications. One OMNR forester stated that the Ontario Professional Foresters Association had indicated it did not support the need for aerial spraying and he predicted it would "be out" in two years.
- A few participants in all groups made reference to the problems of managing vegetation on large acreages in the north. One OMNR technician felt that aerial spraying is a very practical vegetation management tool in terms of cost, ease of application, effectiveness, and safety (he stated that there were tighter controls on aerial spraying operations than on ground applications). A few participants felt that applicators would be less concerned about carrying out safety practices in these vast areas while out of public view.

- Some participants in the interested and organized public expressed interest in learning about which chemicals are used, when, how, and how much; they wanted to know more about the technical aspects of spraying.
- Other participants, more so in the organized public, expressed opposition to herbicide application in forestry for a number of reasons, and questioned the need for it if better forest management practices were prevalent.
- A few participants from the organized and interested public (approximately one to three people from each group) who indicated familiarity with herbicide use, said there was a need for some herbicide application under certain conditions.

Implications

- OMNR should be prepared to talk with the organized and interested public regarding their concerns about the application, especially aerial, of herbicides for vegetation management in forest regeneration. OMNR staff should be prepared to:
 - 1) provide information about what kind of herbicide application is happening - which chemicals, where, when, why, how, how much.
 - 2) explain the basis for OMNR's decision to apply herbicides to those who have concerns about the safety and need for herbicides.
 - 3) explain how OMNR has reconciled its use of herbicides in light of the kinds of concerns expressed by some participants in the interested and organized public and professionals' focus groups.

F. Understanding of the Herbicide Regulatory Process

Findings

- Few participants from the interested public felt they knew much about the regulatory process. Those who did know something about the process had learned about it through their education or work experience.
- Most participants from the organized public knew something about the regulatory process. Some had learned about the process through their formal education, work experience and/or independent investigation.
- Professionals who used herbicides in their jobs knew more about the regulation process than those who did not. For example, in North Bay foresters knew more about the regulation process than forestry consultants.

- Some members of each focus group expressed concerns about the regulation process and scepticism about the effectiveness of the process. A summary of these concerns are noted later.

Implications

- OMNR should communicate with the organized and interested public about the regulatory process and OMNR's response to it; e.g., the training and supervision of applicators/applications, OMNR's view of the adequacy of the research on herbicides, and the herbicide product registration process, etc.
- OMNR should share the concerns of its staff and the public with the applicable herbicide regulation bodies.

G. Concerns about Herbicide Use in Forest Regeneration

Findings

- Many participants from the interested and organized public, as well as some participants from the professionals' focus group (particularly biologists) had concerns about the use of herbicides in forest regeneration. Most participants from the organized public would like to see a severe reduction of herbicide use and a few favour a total ban. Most participants from the interested public felt that a ban may be desirable but is not realistic at this time.
- Some participants from the interested and organized public, while acknowledging that the volume of herbicide use in agriculture and urban lawn care is much greater than in forestry, said that herbicide use in forest regeneration is still of concern to them.
- A few participants from the interested and organized public (approximately one to three) were interested in up-to-date research information pertinent to their concerns; for example:
 - short and long-term impacts of herbicides on the ground water, soil and other elements of the ecosystem such as wildlife and berries,
 - herbicide breakdown products and fate of the breakdown products in the environment, and
 - cumulative effects, particularly non-lethal, of herbicide use from all sources including agriculture, roads, hydro rights-of-way, home lawn care, etc.

- Some others were not confident that research could alter their concerns about herbicides because:
 - researchers ask the wrong questions; i.e., they should not ask whether or not herbicides will kill people but instead should ask about the effects on human health,
 - researchers have biases based upon their sponsors or funding sources; e.g., chemical companies want research that will sell herbicides, and
 - it may not be possible to do research on a long-term basis; therefore, these individuals would rather err on the side of caution.
- Some of the concerns that were most often expressed about herbicide use in forestry were:
 - 1) Concerns about Herbicide Use due to Forest Management Practices
 - Clear cutting leads to monocultures (most often expressed by participants from the organized public); OMNR should change its cutting to block or strip cuts; favour natural regeneration (although participants' definition of natural regeneration was not clear).
 - Herbicide use is part of a negative cycle of forest management. Herbicide use is a remedial measure for poor forest management practices in the past. Herbicides are overused today because the forest industry did not replant what they cut in the past, and commercial planters did not replant well. Therefore, there is a shortage of trees for the forest industry and herbicides are needed to maximize the yield in areas which are replanted and to minimize the competition on sites which were not properly prepared for replanting.
 - 2) Concerns about Safety and Potential Negative Effects of Herbicides on the Ecosystem
 - Herbicides (inerts, carriers) may contaminate the water.
 - The long-term and/or cumulative effects of herbicides on the ecosystem are not known; e.g., how different chemicals interact, break-down, and travel up the food chain, and loss of integrity of the micro environment.
 - Safety for humans and wildlife; e.g., songbirds, big game, live-stock, people eating blueberries in areas which have been sprayed.

3) Concerns about the Herbicide Regulatory Process

- Ability of the regulatory body to adequately protect human safety — some participants who had investigated the regulation process were uncomfortable with a regulation process which does not require licensing for home use of herbicides and only recently required farmers to be licensed to use herbicides.
- Ability of the regulatory system to ensure adequate supervision of applicators — participants have the impression, and some say they have evidence or first-hand experience, that herbicide application is not carefully supervised.
- Ability of the registration process to assess the negative long-term, cumulative, and/or non-effects of herbicides — "If things are so well regulated, why is the environment so polluted?"

4) Concern for Other Forest Values

- Biodiversity - dislike monocultures and want to maintain the gene pool.
 - Wildlife habitat and tourism benefits through big game hunting.
 - Recreational use; e.g., fishing, canoeing, camping, berry picking
 - Less consumptive use of forests — should encourage reduction of use of wood products.
 - Less intervention by people in the forest and more reliance on natural processes.
- Other concerns expressed by the study participants were:
 - The need to build in environmental criteria, not only economic criteria, in decision making about herbicide use in forestry.
 - Poorly-informed public who use herbicides at home.
 - Lack of information in the public domain about herbicide use in forest regeneration — what, why, where, when, how.
 - Political interference in forest management — foresters know what needs to be done but political agendas force them to do things differently.

- Lack of communication among agencies which are using herbicides for vegetation management and searching for alternatives.

Implications

- When interacting with the public on the issue of vegetation management alternatives including herbicides, OMNR staff should be prepared to speak to vegetation management practices as they relate to the expectations of the interested and organized public expressed in this study and summarized below (in no particular order):
 - Increase biodiversity and maintain the gene pool in reforested lands.
 - Regenerate forests at the same or better rate than what is cut.
 - Regenerate forests in ways which decrease or eliminate herbicide use.
 - Protect water quality.
 - Protect the safety of humans and wildlife.
 - Protect the environment against long-term, cumulative negative effects.
 - Maximize controls on applicators who apply herbicides - possibly require more safety measures than are required by regulatory agencies.
 - Use environmental impact criteria in addition to economic impact criteria when deciding upon vegetation management methods.
 - Protect other forest values, especially wildlife habitat, tourism (e.g., big game hunting in the north), and leisure and recreation (e.g., canoeing, camping, berry picking).
 - Use more "natural" processes and minimize human intervention.
 - Choose top quality practices that lead to top quality results - initial costs may be higher in the short term but produce high quality results in the future.
 - Take a leadership role in reducing consumption of wood products.
 - Take a leadership role in working with other agencies regarding vegetation management and learn from each other in the pursuit of alternatives.

- Provide information to organized and interested public on OMNR's progress in meeting the above expectations.

H. Supportive Comments about Herbicide Use in Forest Regeneration

Findings

- A few participants (approximately one to three in each of the interested and organized public focus groups) whose work and/or professional training gave them familiarity with herbicide use in forestry expressed support for herbicide use under certain conditions. In their view, herbicides in forestry should be applied using an integrated vegetation management approach:
 - with professionalism
 - in minimal amounts
 - using methods that produce the maximum effectiveness
 - as a last resort

Some examples of the kinds of people who expressed the above conditional support for herbicide use were:

- a naturalist representative who was a forester by training
- a staff of the Ministry of Environment
- professional parks staff
- forestry university professors
- nursery staff
- forestry workers

Implications

- OMNR should attempt to align its operations as closely as possible with the above conditions for herbicide use in forest regeneration.
- Furthermore, OMNR should seek alliances with other agencies who take a similar approach to or have a similar view about herbicide use. Some possible alliances to explore might be:
 - Other provincial government ministries/agencies; e.g., Ministry of Environment (MOE)
 - Professional associations e.g., Ontario Professional Foresters Association
 - Non-governmental organizations (the Canadian Wildlife Federation policy accepts minimal use of herbicides under certain conditions)

I. Alternatives to Herbicides

Findings

- OMNR professionals who participated in focus groups varied in their views about herbicides and alternatives:

"Preventative measures can save money - more surveys, matching species to site, modified cutting/natural regeneration, more site preparation, where necessary. Timing of manual cutting can also make a big difference. Site specific prescriptions are important. - *the emphasis should be on thorough planning on the ground.*" (OMNR forester)

"There is a place for each alternative. But money should be put into operations to use tools that we know work rather than experimenting with tools that we know will not work (VMAP). - *[OMNR's] mandate is still to grow within a given timeframe.*" (OMNR resource technician)

- When asked to comment on alternatives to herbicides, some focus group participants discussed alternatives in a general way. Some participants noted a few pros and cons of certain alternatives. Examples include:

1) More intensive work on the ground

The most commonly mentioned alternative to herbicides was manual cutting and tending. However, this alternative was also mentioned along with more intensive involvement of foresters in better planning of harvesting and better cutting, planting and tending practices. Participants who valued this alternative understood that the costs would be higher than the cost of herbicide application, but felt that the local economy would benefit rather than the chemical companies and that our societal concern about unemployment could also be addressed. They also see this as a preventative strategy, whereas they saw herbicides as a remedial measure needed because of poor forest management practices.

2) Mulches and ground covers (e.g., clover)

Participants mentioned mulches and ground covers as an alternative which was a more "natural" form of vegetation management.

3) Sheep

Sheep were raised as an alternative in most focus groups. Some people were sceptical about the practicality of using sheep (predators, ability to

do large acreages, contamination from droppings, loss of nutrients) while others saw this as another employment strategy and "natural" method.

4) Fire/prescribed burns

A few participants in most groups commented positively about the use of prescribed burns as an alternative which could lead to natural regeneration. Natural regeneration was seen to be more positive than artificial regeneration to some people. One member of the organized public who favoured controlled use of herbicides was concerned about what he predicted would be the high labour cost of this alternative.

5) Biological "natural" methods

This alternative was also mentioned in some focus groups as an alternative to herbicide use. Some participants also saw that understanding biology better, e.g., developing hardier seedlings, is a worthwhile alternative to pursue.

6) Biological controls

Some participants suggested greater examination of biological control methods with the proviso that they be explored with care.

- Many participants, especially those from the organized public, raised broader alternatives to herbicides:

1) Importance of other forest values

"The forest is more than trees. There is a dollar value for hunting and fish provide a long-term value."

2) Improvements to forest management

"We need a blueprint for our public lands. The blueprint should include such things as endangered spaces of sufficient size. At present we don't know how big is big enough." "Don't rely on any one method (of vegetation management) everywhere." "Adopt a long-term planning framework."

3) Adopt a new paradigm

Reduce dependence on forest products; e.g., make recycled paper cheaper and more accessible.

Implications

- OMNR should consider the possibility of addressing societal concerns about unemployment through forestry and vegetation management alternatives. The emphasis should be skilled labour (e.g., well-trained planters and manual tenders) as well as professional forest planners and technicians.
- In developing alternatives, OMNR should keep in mind the expectations of the organized and interested public noted above; e.g., protection of water quality, safety of humans and wildlife, use of "natural" controls.

J. Risk Perception

Findings

- Some participants in the organized public and professional focus groups commented that they disagreed with those who say that herbicides are not harmful. Some feel it is "arrogant" to say that there are no risks. Specifically, they disagree because the proponents of herbicide safety are only looking at a limited number of impacts. These participants were concerned about:
 - herbicide pollution of water,
 - hazardous waste in the production of chemicals,
 - the overall toxic load in the environment, and
 - long-term, cumulative, non lethal impacts on people and the ecosystem.
- Some participants noted that although there is less volume of and, therefore, less risk from herbicide use in forestry than in agriculture or urban settings, herbicide use in forestry is still a problem.

Implications

- OMNR should approach the issue of public perception of the risks associated with herbicide use with sensitivity:
 - Some people will be interested in up-to-date information regarding their concerns and the basis for OMNR's view that herbicides are safe as well as sources of research for further investigation.
 - Others, perhaps a larger proportion, will be highly sceptical of the safety of herbicides and will be most interested in knowing how OMNR has reconciled its use of herbicides in light of the concerns noted above (i.e., herbicide pollution of water).

On these issues, OMNR staff must:

- Be knowledgeable and up-to-date on research information relevant to herbicide safety issues;
- Be able to communicate effectively with individuals and organizations about their concerns.

K. Credibility Regarding Vegetation Management in Forestry

Findings

- The participants from the interested and organized public do not trust many of the key parties involved in vegetation management for forest regeneration. For example, the following summarizes the participants' perception of credibility:
 - University professors and university forestry departments lacked credibility with some participants in each kind of focus group. They want to know who funded the research. On the other hand, a few participants from the interested public felt that professors who had published peer-reviewed research or with whom they had made a favourable personal contact were credible.
 - Scientists were only credible if their research was not funded by a special interest (e.g., chemical companies, the forest industry).
 - Chemical companies and the forest industry were not credible.
 - OMNR and government credibility varied. Some participants felt that OMNR was highly credible (e.g., Lindsay District office) while others felt it had little credibility. Some participants in Thunder Bay felt that OMNR was more credible than the chemical or forest companies.
 - Some participants felt that environmental groups, hunters and angler were the most credible.
 - A few participants stated that no one is credible and that no institution should be blindly trusted. No research is perfect.
 - The regulatory process is not credible to a few participants from the organized public because the research is done by the applicants and is only reviewed by three people in the federal government.

- Some of the advice focus group participants gave OMNR about how to build credibility with the public includes:
 - 1) Convey that OMNR understands that the public feels that government protection agencies have failed to protect public safety and the integrity of the environment/ecosystem; e.g., DDT, contamination of ground water by chemicals including herbicides in rural southern Ontario.
 - 2) Build personal relationships based upon mutual respect. Listen and provide information and resources, if asked.
 - 3) Don't expect the public to accept the conclusions of anyone else. Some, perhaps a small percentage, will actually educate themselves in order to draw their own conclusions about vegetation management in forest regeneration.
 - 4) Provide accessible, non-technical information of interest to the public, on both sides of the argument. If OMNR does not have the information, say so as this builds credibility. Include "anecdotal" sources of information. Avoid "selling" OMNR's point of view. Some other information of interest to the public raised during the discussion on building public credibility includes:
 - what the future of spraying herbicides is in Ontario,
 - what forest management practices are,
 - what the alternatives to herbicides are, and
 - what the regulation process is.
 - 5) Take more precautions in vegetation management and in herbicide use.
 - 6) Be willing to compromise based upon public concerns.
 - 7) Work with such groups as fish and game clubs, field naturalists, and environmental groups. These groups have credibility with the public.
 - 8) When citing research (in a brief and understandable form), let the public know who funded the research, the author's "agenda", and how to get access to a more detailed version of the study.
 - 9) Access research which is more impartial and make it accessible; e.g., fund and publish research by those who have less of a vested interest.
 - 10) Form a tripartite body (government, forest industry, environmental groups) to jointly review and approve research proposals and to decide what

questions should be asked — "The research may not be better than at present, but it will be more credible".

- 11) Take a leadership role in establishing an integrated vegetation management association, perhaps both at provincial and local levels. Work with other agencies involved in vegetation management to determine what policies and practices are common. Some participants are concerned about the discrepancy between experts and practices of different jurisdictions regarding herbicide use.
- 12) Demonstrate to the public that OMNR knows ecology and can discuss the issues.
- 13) Use a public "watchdog"; i.e., environmental groups

Implications

- OMNR should act upon the above advice and use public involvement strategies as a major vehicle for building credibility.

L. Approaches to Public Interaction

Findings

- Some study participants felt that the focus group approach was a good first step in interacting with the public on the subject of vegetation management. As one participant expressed, at first it will require a lot of interaction but eventually trust will build.
- A few participants in North Bay, Carleton Place, and Thunder Bay reacted with scepticism about the sincerity of VMAP, wondering if the study was a manipulative, public relations strategy. The "sceptics" were not confident that OMNR would act upon the participants' input.
- Participants in all focus groups actively contributed ideas and advice about how to interact with the public about vegetation management and herbicide use. Some of the key suggestions were:
 - 1) Start by communicating information that the public wants. Use language they can understand. Some suggested venues are:
 - local media releases

- news releases to newsletters, magazines read by the public (e.g., Fishing/hunting, naturalists, canoeing, and camping associations magazines and newsletters; Organic Gardening; Harrowsmith)
 - OMNR newsletter to clients
 - TV coverage "spots", environmental channel
 - brochures
 - videos
 - photo displays
 - field tours
 - field trips
 - displays in forests (demonstration sites)
 - presentations to municipalities
- 2) Communicate and interact on a continuing basis. Form an ongoing relationship with the target groups.
- 3) Provide a real opportunity for the public to be involved in decision making about what goes on in the forest, well before it is a 'fait accompli'. Avoid token involvement.
- 4) Use a multi-stakeholder approach. Bring people together with competing views to "look for joint solutions" and to limit special interest group domination.
- 5) Interact with children including providing youth with opportunities for involvement. One suggestion was to educate children along the lines of 'Focus on Forests'¹.
- 6) Make the interactions easy, accessible and two-way. Some suggestions from the study participants were:
 - Provide a 1-800 number and an address to write to,
 - Join a computer bulletin board/network like NIRV,
 - Provide longer time lines for volunteers,
 - Use an array of different methods for interaction; e.g., the Sewell Commission² did it well; other examples include consultations, public meetings,
 - Schedule meetings in evenings or on weekends rather than during the day, and within a reasonable distance from home,

¹ An OMNR initiative to provide teachers in Ontario with forest related activities to use as teaching aids.

² A land use planning exercise where the public was involved (mentioned by participant in a Carleton Place focus group).

- Provide some financial assistance for volunteers' out-of-pocket expenses,
 - Train foresters to interact and communicate effectively, and
 - Go where the public is, for example, malls (displays), community events (ploughing match, fall fairs, university education weeks), community centres, schools, clubs, conferences.
- 7) Finally, provide feedback to the participating public to illustrate how OMNR has used their input and involvement. Some examples of how to do this include distributing the findings of this study to the study participants, and sending a letter of thanks along with an indication of how the focus group information will be used.

Implications

- OMNR should act upon the above advice of the study participants to interact effectively on the issue of vegetation management including the use of herbicides in forestry.

Initially, OMNR will encounter some questions about its motives. Some people will welcome the opportunity to participate; others will be highly sceptical. Trust and credibility will build over time as OMNR is able to demonstrate and communicate how it has acted upon the input and involvement of its target groups.

M. Other Comments and Advice

Findings

- Some participants expressed interest in learning about VMAP, its objectives, and the current changes occurring in the field as a result of VMAP.
- A few participants commented that OMNR should influence and train forest industry staff about vegetation management, forest management, and alternatives to herbicides, etc.
- A few participants noted that training of OMNR foresters and other staff was important to this project.

Implications

- OMNR should include information about VMAP when communicating with the target groups.
- OMNR should carry out training of foresters on interaction with the public.

- OMNR should develop strategies for influencing and training forest industry staff on vegetation management, etc.

4. Conclusion

Participants in the focus groups, in all localities, appeared eager for the opportunity to discuss their views with OMNR. For the most part, they were supportive of OMNR for its interest in seeking out their views.

The findings of the focus groups were quite consistent with the findings from the literature review and key informant interviews from Component A of the study.

In addition, the *pattern* of findings among focus groups in the different locations was quite consistent. Similar viewpoints and concerns, with minor differences, were raised in all groups including the professionals' focus groups.

For example, while there were some differences of opinion in every group, most participants representing the organized and interested publics and some professionals, expressed some discomfort, at a minimum, with the use of herbicides in forestry and strongly supported the search for alternatives. A few participants in the interested public focus groups and many participants in the organized public focus groups favoured an all-out ban on herbicides. However, most of the interested public focus group participants and a few of the organized public participants felt that an all-out ban was not realistic at this time.

Participants voiced strong support for involving the public in a meaningful way in future decisions regarding the management of Ontario's forests. Thus VMAP appears to be well positioned provided it focuses on alternatives and provides opportunities for environmental groups to participate in the program in some way.

PART C:
IMPLICATIONS AND RECOMMENDATIONS

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1. Introduction

The purpose of this component of the study was to identify the implications for VMAP and OMNR of the information obtained from both Components A and B of this study. The primary purpose of this report is to recommend a public involvement strategy for VMAP. In addition, in keeping with its terms of reference, this report also identifies implications for:

- VMAP's overall strategic direction;
- The VMAP research program;
- Vegetation management practices in Ontario;
- Broader forest management considerations;
- Training of foresters in interacting with the public.

The implications and recommendations in this report:

- Are based upon approaches that are most likely to gain public acceptance;
- Take into account approaches to public involvement used in other jurisdictions, why they were developed, and how they have influenced vegetation management practices;
- Recognize the role that views of the public are now playing in influencing policies about forest management, including the use of herbicides.

They do *not* take into account other factors, such as scientific and operational considerations, and views of the forest industry that may also be relevant, but are beyond our terms of reference.

2. Strategic Implications for VMAP and OMNR

A. Implications of the Research Findings for VMAP's Overall Strategic Direction

VMAP's goal, according to its Program Prospectus (Wagner 1992b), is:

"To gradually reduce dependence on herbicides in Ontario's forests by developing alternatives and gaining a better understanding of forest ecosystems through research, education, and field delivery." (italics added)

The program, in large part, has been developed in response to concerns of the public about herbicide use. A critical issue for VMAP is "the need for *socially acceptable* alternatives to herbicides that are safe, environmentally sound, effective, and economical." (Wagner 1992b, italics added)

VMAP's objective, of moving towards a long-term, substantial reduction in herbicide use in Ontario's forests, generally appears to be consistent with the views and demands of the public. The public is uncomfortable with herbicide use in forestry. Some people call for a total ban on its use. Most however, while viewing total elimination of herbicide use as ideal, recognize that this is unrealistic and are willing to accept some use of herbicides. Many say, however, that herbicide use should be minimized, other alternatives should be considered first, and that current use of herbicides should be within the context of a long-term plan to severely curtail their use.

Thus the public *should* be supportive of the direction taken by VMAP. At the time of this study, because VMAP has not yet started its public education program, there was little awareness of the program among persons who were interviewed. But the initial reactions to VMAP, based upon comments of those who had some knowledge of it, were mixed:

- Some expressed support for VMAP and its mandate of researching alternatives;
- But others questioned some of the assumptions of VMAP and statements about views of the public contained in VMAP publications. Some questioned if VMAP is "for real" or if it is just "public relations" to justify continued herbicide use and to quell public opposition. They wonder whether or not VMAP will result in actual changes in herbicide use in the field.
- VMAP, in order to establish its own credibility and to obtain support from the public, needs to overcome general public scepticism about government.

Thus support for VMAP may be vulnerable. If the organized and the interested public does not support VMAP, given that the stated rationale for the program is to respond to concerns of the public, then VMAP's activities and even its reason for being may be called into question.

It is also important to note that the experience of other jurisdictions, as discussed in Part A, indicate that if the public feels that its views are not being taken into account, demands for restrictions on herbicides escalate. As a result of public pressure, many jurisdictions in Canada, North America, and Europe have banned outright or severely limited herbicide use.

Based upon the findings from this study, VMAP *can* succeed in gaining public support. To do so, it and OMNR more broadly need to:

- Focus all aspects of VMAP on alternatives;
- Demonstrate that VMAP's research and program initiatives result in changes in vegetation management practices and reduced use of herbicides;
- Acknowledge the concerns of the public as legitimate and recognize the public as one of the clients, stakeholders, and participants of VMAP;
- Provide opportunities for the organized public to be involved in a meaningful way in helping VMAP decide its strategic direction and priorities for its research.
- Demonstrate VMAP's credibility and independence.

Public involvement, in particular, is critical for obtaining support for VMAP. The following chapter presents a comprehensive public involvement strategy. If members of the organized public are supportive of VMAP, they in turn may be willing to act as supporters and allies of the program to others.

In order to establish its credibility and independence, the new Pest Management Alternatives Office has been established by Agriculture Canada as a private non-profit organization, arm's-length from government, with representatives on its Board of Directors from the major interest groups. As VMAP is part of OMNR, this form of organization is not currently feasible. VMAP might consider, however, establishing some form of independent advisory body or equivalent with multi-sector representatives. At a minimum, as indicated above, it is important that VMAP involve the organized public in some way in deciding upon its research priorities.

Recommendations

- *VMAP should recognize the public as a client, stakeholder and a participant in the program.*
- *All aspects of VMAP should focus on alternatives to herbicides.*
- *VMAP should provide opportunities for meaningful public involvement in its direction, through application of strategies identified later.*
- *VMAP should identify how its research is leading to reductions in herbicide use.*

B. Implications for the VMAP Research Program

Research Priorities

In order to address interests and demands of the public, the focus of VMAP's research program needs to be on alternatives to herbicides.

Following are the types of alternatives of interest which were identified through this study:

- "Natural", non-chemical methods in general;
- Emphasis on natural regeneration, with minimum human intervention;
- Means of promoting biodiversity rather than the growth of monocultures;
- Preventative measures, such as site preparation;
- Alternative methods of harvesting which will reduce the need for subsequent vegetation management interventions;
- Manual cutting;
- Mulches and ground covers;
- Sheep (with limitations noted);
- Prescribed burns as an alternative which could lead to natural regeneration;
- More attention to biological factors, such as: identifying hardiest stock for planting, tending of seedlings, cutting poplars during the optimal time of the year;
- Alternative means of planting and tending seedlings;
- Biological controls, recognizing that these need to be researched very carefully;
- Research into use of "weed" trees and the understory, as well as other means of more efficient use of forest products, so that the need for vegetation management interventions can be minimized.

We recognize that the above list is general, and possibly even somewhat contradictory, in nature. We recommend that it serve as a starting point for discussions with representatives of the public, as well as with VMAP's other stakeholders, in deciding upon more specific research studies.

Building Credibility for VMAP's Research

As Parts A and B of this study indicated, there is considerable scepticism among the public about existing research regarding herbicides and limited trust in researchers carrying out this work. There is a concern, for example, that research studies about herbicides may be addressing what they view as the wrong questions.

A solution to this situation, as discussed in the previous section, is to provide members of the organized public with an opportunity to take part in choosing research priorities. For example, some focus group participants proposed a tripartite body, with representatives from government, industry, and environmental groups, to jointly review and approve research proposals and decide upon which questions should be addressed through the research. As one person added: "The research may not be better than at present, but it will be more credible."

Some other means of developing credibility for VMAP's research include:

- Making information available to the interested public, through means discussed later, about the types of research VMAP is supporting and why;
- Encouraging independent groups to publish directly the findings and implications of their research studies;
- Making available information about research findings in layperson's as well as technical formats.

Examples of approaches used by other government programs include:

- Requiring researchers, as a condition of their grants, to produce lay summaries (and in some cases news releases) as well as technical reports;
 - Producing their own publications which summarize findings of research (including summaries of individual or selected studies, a volume with summaries of all or selected research studies, and reviews discussing findings and implications of a number of studies) in non-technical language;
 - Publishing summaries or descriptions of research studies in publications read by members of the interested public and/or encouraging researchers to do likewise;
 - Encouraging the organized public to prepare their own reviews and critiques of sponsored research.
- Giving examples of how VMAP-sponsored research is being applied.

- Inviting members of the organized public to share their ideas about implications of research for forestry practices as well as for additional research.

Recommendations

- *The VMAP research program should focus on identifying alternatives which will minimize the need for herbicides;*
- *VMAP should involve the organized public in deciding upon research priorities as one means of building credibility;*
- *Research findings should be made available in formats suitable for laypersons.*

C. Implications for Vegetation Management Practices

As previously discussed, most members of the public would like to see herbicides used as little as possible in forestry. A number of other jurisdictions have banned or placed severe restrictions on herbicide use. It is possible that some members of the public in Ontario may call for greater restrictions of herbicide use if they do not feel that there is movement towards greater use of alternatives.

Alternatives to herbicides that focus group participants in this study say they would prefer are listed in Section 2.B. The most commonly mentioned vegetation management alternatives were manual cutting, site preparation, and tending.

A number of people said that labour intensive methods would be consistent with broader social welfare objectives as well as the provincial government's priority to job creation. Participants recognize that this would be more costly to industry, but feel that this would be of greater benefit to local economies. A number of participants who favoured these approaches suggested that in addition to creating more jobs, this would also require more involvement of trained foresters; for example, in planning better means of planting and tending seedlings and harvesting. These same themes have also been identified in other jurisdictions.

As Part A in particular discussed, there is a strong movement, among members of the public as well as among some people within the forest industry, towards managing forests in keeping with the new paradigm. As the next section discusses, alternatives of greatest interest to members of the public involve different approaches to the management of forests, including for values other than timber production and a different approach to the marketing of forest products. These trends have implications for silviculture and vegetation management practices.

Some form of Integrated Vegetation Management (IVM) appears to be the most acceptable approach, provided that it includes the following characteristics:

- A long-term preventative focus, involving an ecosystem approach (e.g., Von Schuckmann 1992);
- Authorizes the use of herbicides only under limited circumstances and only after other approaches have been considered first for the specific site in question;
- Provides for public involvement in the design as well as in individual decisions;
- Recognizes concerns of the public about safety;
- Involves site specific rather than large-scale broadcast applications.

There appears to be a need in Ontario for a provincial integrated vegetation management association, as well as perhaps for local committees. The Integrated Vegetation Management Association of British Columbia (see Appendix 1) might serve as a potential model. In order to avoid duplication and to add to public credibility, all major sectors (e.g., forestry, agriculture, hydro, roads, lawn care, public interest groups) should be involved. VMAP might take a lead role in forming such an association.

In order to establish credibility with the public when considering the use of herbicides, OMNR foresters should be prepared to demonstrate how the ministry is:

- Minimizing the use of herbicides;
- First considering other alternatives;
- Providing thorough training and strict supervision of applicators;
- Limiting exposure to human and animal life;
- Up to date on research about the short and long-term impacts of herbicides on the ground water, soil, and other elements of the ecosystem system such as wildlife and berries;
- Up to date on research regarding the breakdown of herbicides and the fate of the breakdown products in the environment;
- Up to date on the research on the cumulative effects of herbicide use for all sources including other sectors as well as forestry.

When considering application of herbicides in a given area, OMNR staff should be in contact with members of the public as early as possible in the process of deciding how

to deal with a vegetation problem. The experience in other jurisdictions is that when people are notified and involved early in the process, there are fewer problems than when people only find out about plans at a later date.

Risk Perception

A key area of potential disagreement concerns what constitutes "acceptable" risk. Findings from both the literature and the focus groups indicate that members of the public feel that herbicides do pose a risk to both human health and to the environment.

This public position is divergent from the belief among many scientists and forestry professionals that the risk associated with herbicides is minimal. In part, this difference in position is based upon lack of trust of government bodies, industry spokespersons, and even of many university researchers. In part, it is based upon attention to different questions. For example, many members of the public say that what is of interest to them are the non-lethal, cumulative, long-term impacts, and that research which is limited to identification of short-term effects does not satisfy them. Concern has been expressed, in particular, about the "toxic load" of all chemicals on the environment and on water supplies, including herbicides used in forestry together with chemicals used in other sectors.

But ultimately, as the literature indicates, decisions about risk perception involve value judgements rather than science. People may agree upon the data and still draw different conclusions. For example, one person may interpret data that have not identified any negative impacts up to a twenty-year period as demonstrating that the herbicide would be safe to use. Someone else, however, might interpret the same data as saying that we do not know if there is any risk over a longer period of time or in interaction with other factors and therefore that this risk is unacceptable.

Furthermore, people may accept risks in some contexts that they reject in other settings. For example, people may tolerate use of herbicides in agriculture because they view food production as essential for survival, but reject herbicide use in forestry because they view forest products as less of a priority.

Recommendations

- *OMNR should adopt some form of Integrated Vegetation Management (IVM) approach to minimize the use of herbicides in forestry;*
- *Consideration should be given to linking more intensive use of manual cutting and tending with provincial job creation objectives.*

D. Broader Forest Management Implications

As Chapter 7 of Part A indicated, it is apparent that a paradigm shift is under way in forestry. This reflects a different set of values about how forests are to be managed, a broader view of forest products and how these should be marketed, a more integrated and holistic approach to sustainable forestry, and a more active role for the public in decisions regarding forest management. This paradigm shift has been identified by representatives within the forestry sector, as well as by public interest groups and spokespersons. For example, OMNR's new philosophy of sustainable forestry reflects many elements of the new paradigm.

Strong support for the new paradigm also came from the focus groups. For example, when focus group participants were asked to identify more acceptable vegetation management alternatives, they instead consistently raised broader forest management issues. In spite of attempts to probe for reactions to alternative vegetation management practices, participants referred to larger concerns about the way forests are managed and how forest products are used.

For example, many participants view herbicides as a remedial measure needed by "sick" forests resulting from poor forest management practices in the past. They say that if forests were managed for sustainability, there would be little or no future need for herbicides. They call for different approaches to forest management, in particular for different methods of harvesting. They say that there should be more of a long-term, preventative orientation in forest management which would minimize the need for interventions through "artificial" means such as herbicides.

Participants say that there should be more efficient use of forest products, greater use of "weed" trees such as poplars, and greater use of the understorey. Many participants also say that our consumer society overuses and wastes forest products. They say that there should be more attention to conservation; e.g., greater emphasis on recycling. They say that OMNR should play a leadership role in identifying that our forests are not unlimited resources and in encouraging more responsible use of forest products.

Focus group participants also assert that representatives of the public have a right to participate in decisions about forest management.

Recommendations

- *OMNR should address concerns expressed by the public regarding the way forests are managed and explore alternatives which are being used in other jurisdictions.*
- *OMNR should actively explore alternative ways of marketing forest products in keeping with the new paradigm.*

3. Public Involvement: Definitions, Principles, and Target Groups

A. Benefits of Public Involvement

There are a number of important reasons for involving the public in VMAP and in decisions about herbicide use in forestry:

- Members of the public increasingly are demanding the right to participate in decisions that affect the use of public land and the environment. They are no longer willing to leave these important decisions to experts or administrators.
- Views of the public, including those of interest groups, increasingly are influencing the policy process with respect to all aspects of forestry, including vegetation management. Public views are now as important as science in influencing decisions about many aspects of forest management.
- The evidence from other jurisdictions is that ignoring public concerns causes them to escalate rather than to abate. Attention to public views and opportunities for involvement can prevent extreme positions from becoming firmly entrenched.
- Involvement of the public in the decision-making process, together with other stakeholders, provides authority and legitimacy for decisions and can result in the identification of creative solutions to seemingly intractable problems (e.g., Johnson 1993).

B. Definitions

Public involvement means providing opportunities for members of the public to play a meaningful role in decision making about issues of public concern. "Public education" and "consultation" are sometimes defined to mean the same thing, although these terms are also sometimes used in other ways.

For example, public education, as defined in the VMAP Prospectus (Wagner, 1992b) refers to:

- Active participation and dialogue with all who have a stake in forest management, including forest managers, researchers, and interest groups;
- Interaction and cooperation with environmental and outdoor organizations;

- Letting the public know about VMAP's advances in developing alternatives to herbicides and better methods of application;
- Two-way communications, so that forest managers and researchers learn what the public wants and feels is acceptable.

Agriculture Canada's *Guide to Consultation Processes* (Leiss 1991) defines consultation as:

"A process of purposeful exchange of views among both stakeholders and members of the general public. Stakeholders are those organizations whose members have a stated interest in issues that are a matter of public concern."

It lists three essential criteria for consultation:

1. "Consultation is a process of two-way communication that occurs in the context of a structured process.
2. Each consultation exercise itself is intended to produce a specific result or end-point, which should be formulated by the responsible agency and communicated to all participating groups at the beginning of the exercise.
3. Consultation involves power sharing between the Government and the people it serves through a democratic process of exchange."

C. Key Principles for Public Involvement

Following are key principles for effective implementation of public involvement approaches. These principles may sound simple and even self evident, but their implications are profound. When these principles are applied, public involvement processes tend to be most effective. Conversely, if any of these principles are neglected, problems are likely to develop.

- **Recognize and accept the validity of different viewpoints**

You do not have to agree with what others say. But if you expect others to approach you in a constructive way, you need to acknowledge the legitimacy of other points of view.

- **Listen and don't judge**

Similarly, give people the opportunity to express their views without being cut off. It is paramount to avoid any appearance of paternalism in dealing with the public.

- **Provide for a meaningful role of stakeholders in decision making**

If stakeholders do not feel that they are part of the decision-making process in some way, there is little sense for them to participate. Conversely, involvement is a way of creating ownership and legitimacy for decisions which do emerge. They are less likely to be challenged later.

- **Make it as easy as possible for those who wish to get involved to do so**

For example, provide opportunities for involvement in all parts of the province. Identify and address barriers potential participants may face, such as time, cost, need for information, simultaneous requests for input from different parts of OMNR, and others. Otherwise your offer of participation may be viewed as token and resentment may develop.

- **Make sure that all levels of the organization involve the public**

Otherwise the public will receive mixed messages and mistrust your motives. This means that provincial and regional staff of VMAP, as well as OMNR foresters, all need to engage members of the public.

- **Use a community development approach**

This involves placing a strong emphasis on building relationships, meeting people on their own ground, and giving stakeholders an opportunity to help develop a process for involvement which makes sense for them. It requires foresters and resource managers to act as facilitators and resource persons rather than as "experts".

- **Think in terms of social marketing rather than in selling**

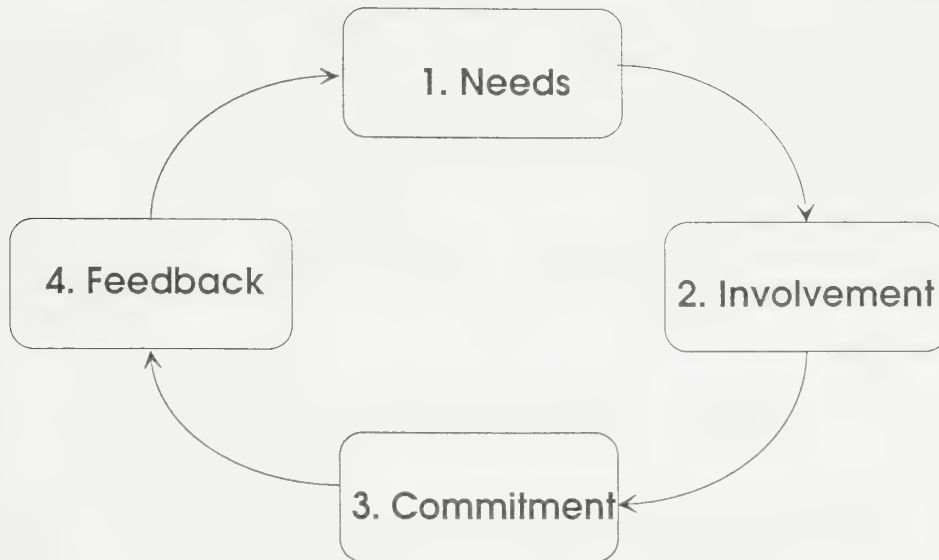
This means putting yourself into the shoes of your stakeholders and identifying their needs and concerns, and the types of information they care about. Your should relate "your" issues to concerns of your stakeholders. Otherwise, your message is likely to be ignored or viewed as propaganda.

- **Be patient**

Recognize that it takes time to build credibility and trust. You need to earn respect and credibility, and particularly where there is a history of lack of involvement, this does not happen in one or two meetings.

D. Four Steps to Public Involvement

The following diagram illustrates four essential steps in the public involvement process:



1. Identify **needs**, interests, and concerns of stakeholder groups;
2. Reach out and offer options for various levels of **involvement**;
3. Make a **commitment** to ongoing involvement and to providing a meaningful role in the decision-making process;
4. Provide **feedback** on how you are acting upon their input.

The focus groups for this study represent a first step in involving the organized and the interested publics. VMAP should follow up on its commitment to participants by providing them with a summary of this report, along with an indication of how it plans to proceed.

Some Guidelines for Effective Communications

- Think in marketing terms; e.g., in terms of what your target audience is interested in knowing and how you can express what you want to say in a way which addresses their interests rather than yours.
- The onus is on *you* to present information, whether formally or informally, in writing or in other formats, in a way that is clearly understood by the target audiences. If they do not understand what you are trying to say or they receive the "wrong" message, *you*, and not they, have failed in your communication.
- In practice, this means that you need to present information in non-technical language, from the point of view of the target audience.
- Preparing good communications is not easy. All effective communicators pretest early drafts of their intended messages.
- Clear language does not mean "talking down". Presenting scientific information in non-technical forms is not easy but it can be done. Techniques for writing clearly can be learned via courses or instruction or by getting someone else to critique or rewrite materials you initially prepared. Another option for written materials is to use an editor or science writer to prepare materials intended for the public. For verbal presentations, however, you are on your own.

E. Recommended Target Groups for VMAP

We recommend the following as VMAP's primary target or stakeholder groups of the larger public:

First Priority

- The organized public — i.e., environmental and outdoors organizations and other interest groups;

Second Priority

- The interested public — i.e., members of the public who have expressed interest in forestry matters.

These target groups are based upon approaches used in other jurisdictions and reported in the literature, as well as Ontario-based information.

We do *not* recommend viewing the public-at-large as a major target group. This would require expensive communication approaches with little payback. But it is important to provide the public with opportunities to become involved if they express interest. In that case, they would become part of the "interested public". Some of the strategies recommended in the next chapter provide means of letting members of the public indicate their interest.

Recommendations

- *The organized and interested publics should be recognized as clients and stakeholders of VMAP.*
- *They should be provided with opportunities to play a meaningful role in decisions regarding VMAP through a process of public involvement which follows the principles identified in the text.*
- *VMAP should provide participants in the focus groups with a summary of this report, along with an indication of how it plans to proceed.*

4. A Strategy For Public Involvement

A. Introduction

This chapter provides a strategy for VMAP to involve the organized and interested publics. This strategy consists of four different levels:

Level 1 — Information Sharing

Level 2 — Resource Sharing

Level 3 — Cooperative Planning

Level 4 — Collaborative Action

The purpose of providing multiple levels for public involvement is to give members of the target groups the option to participate to the degree *they* desire. For example, some persons only want to be able to have information which addresses their concerns. Level 1 would apply to them. Others may wish to be able to provide some input, at Levels 2 or 3. Others, particularly the organized public, will wish to get involved more intensively, at Level 4, in working on joint solutions to problems or concerns. Thus, it is important that VMAP make all levels of involvement available to its stakeholders in some way.

The remainder of this chapter discusses each of these levels of involvement and provides guidelines and potential examples for how these can be implemented.

B. Four Levels for Public Involvement

Level 1: Information Sharing

Information Sharing involves giving the organized and interested public information they are interested in.

The *Guide to Consultation Processes* of Agriculture Canada's Pesticides Directorate (Leiss 1991) states: Information sharing "*is a form of consultation only when the agency has made an honest effort to ascertain stakeholders' information needs and wants*". VMAP¹ must first reach out via approaches such as the focus groups for this study, informal discussions, simple surveys, and ongoing contact with representatives of the organized and interested publics. Information Sharing should not be confused with other forms of information flow which stem from government, such as simple notices of decisions.

Possible Topics of Interest

Following are examples of the kinds of information that the organized and interested public may be interested in having. These examples are based upon the findings of this study. Information requirements do change, however, and the VMAP information needs assessment process should be ongoing.

- Where herbicides are being used, which ones, why, how, under what conditions, and what the future of herbicide spraying is in Ontario;
- Differences between herbicides and pesticides;
- Alternatives that have been considered — pros and cons;

¹References to VMAP in this section may be beyond the scope of the program, and in that case should be taken to refer to OMNR.

- What OMNR safety measures and control mechanisms are in place for herbicide application;
- What the herbicide regulation process is and how it works;
- OMNR's response to public concerns about safety of herbicides;
- Current forest management practices compared with expectations of the organized and interested public;
- Monitoring and evaluation strategies for vegetation management tactics;
- Research — who is doing it, who is funding it, why it is being done, how to access it, independent research sources, what the results are;
- Opportunities for involvement for those who care about the forests;
- How VMAP and OMNR have acted upon the findings of this study.

How To Share Information

- Inform people in a non-technical and simple manner — they haven't the time to study complex information;
- Provide information on both sides of the argument, not just a single perspective, and expect people to make up their own minds;
- Provide information on a regular, continuing basis;
- Use a variety of formats, including written information for publication in newsletters that the intended public reads; alternative media such as Harrowsmith, Organic Gardening; a special program on TVO; presentations to municipal councils (which are frequently broadcast); presentations at meetings, conferences, seminars, universities; displays at community events or open houses; production and distribution of videos; tours at forestry stations; school programs (i.e., Focus on Forests)
- Establish personal contacts with organizations at the provincial, regional and local levels. Ask for their advice about how you can communicate with their membership (e.g., by offering to come to their meetings and conferences);
- Use free news media via news releases and by establishing contacts with local newspapers, radio, television, newsletters, magazines. Establish a media contact list and cultivate a relationship with editors.

- Use OMNR publications; i.e., existing newsletters and/or create a VMAP newsletter for distribution to the organized and interested public. Use the study data as the basis for the first issue. Make it possible for people to subscribe. Send it out on a regular basis, two to four times per year. Encourage input from the readership by attaching a simple form to get target groups to share their views, knowledge, and/or resources on vegetation management alternatives;
- Provide bibliographies, resource lists, and references;
- Go to where the people are (e.g., a booth at the Fall Fair, the Ploughing Match, environmental fairs) and establish a "presence" in the community — *"it isn't enough to invite them in"*;
- Join organizations which put VMAP in contact with the target groups (e.g., Ontario Federation of Anglers and Hunters, Federation of Ontario Naturalists, etc.) and review their mailings to keep in touch regarding issues of mutual concern;

Some Do's and Don'ts

In summary, here are some guidelines for involving the public in VMAP through information sharing:

DO:

- Reach out to determine what organizations and individuals want to know and how best this information can be conveyed to them. Build an ongoing relationship. Ask about their priorities for information, and what formats would be most useful to them.
- Use existing networks as much as possible; e.g., contact environmental, conservation, recreation, tourism associations to reach their members.
- Don't assume the public knows that much; but by the same token, don't assume that they are completely ignorant; knowledge levels can vary widely.
- Make a commitment to share information formally and informally on an ongoing basis.
- Ask for feedback; e.g., how well you have addressed their information needs and how you can do better.

DON'T:

- Send information *you* think the audience should have unless you can relate it to concerns of interest to them — otherwise it will be ignored, misunderstood, and/or viewed as "propaganda".
- Send information merely on the basis of what is convenient for you.
- Hold back information on the basis that you think it is negative.
- Pay for expensive advertising — people don't want to be "sold".

Level 2: Resource Sharing

The purpose of Resource Sharing is to provide a vehicle for structured dialogue (not a consensus) about vegetation management and alternatives. The exchange is two-way: the premise is that both parties have something of value to bring to the dialogue.

Resource sharing strategies are usually designed to achieve a specific objective; e.g., to share vegetation management alternatives with woodlot owners. The objective should be shared with the target group.

Possible Outcomes for Resource Sharing

The following potential outcomes for Resource Sharing arising from the study are:

- Input from the organized and interested public before deciding on a preferred course of action for a new VMAP initiative;
- A common level of awareness of issues related to vegetation management alternatives;
- Knowledge of VMAP's progress and the results in the field to date;
- Vegetation management alternative practices applicable to interested parties; i.e., woodlot owners;
- A forum for discussion of research findings from a variety of perspectives.

How To Share Resources

There are a wide variety of techniques which can be used for structuring dialogue. The objective must match the format. Be prepared to provide some written information,

input tools, referrals, etc. to support the discussion. For example, resource sharing techniques include:

- Displays at community events with information packages to take away.
- Presentations and discussions at conferences, public and special meetings. Provide written handouts.
- Open houses with audio and/or visuals. Use input sheets for feedback in writing.
- Workshops with resource materials displayed.
- Informal discussions ("open door policy") at OMNR district offices or over the phone. Keep fact sheets and referrals on hand for distribution.
- Field tours, perhaps to alternative test sites or forest stations. Prepare map packages with written materials.
- Distribute the report from this study to participants at the focus groups, as promised, with an invitation to become involved in the follow up action.

Some Do's and Don'ts

Some guidelines to follow when sharing resources are:

DO:

- Establish an objective for resource sharing. Make it clear to all parties involved. Be prepared to modify it based upon initial feedback.
- Prepare written materials to help participants understand and to learn.
- Choose skilled communicators, presenters, facilitators.
- Acknowledge contrasting opinions as legitimate.
- Thank people for their participation.
- Provide feedback about what action has resulted, based upon everyone's participation.

DON'T:

- Sell and tell. Don't give the impression that the professionals know everything and that the public is uninformed and irrational.

- Give mixed messages about your commitment to public involvement.
- Be defensive and give unsolicited opinions or advice.

Level 3: Cooperative Planning

Cooperative Planning is a structured process for getting advice from stakeholders, including the organized and interested public, on VMAP's future plans or issues. Cooperative planning takes place over a series of meetings. Participants need time to discuss divergent opinions, collect additional information, and to search for common ground.

VMAP and OMNR maintain formal decision-making power in cooperative planning. The public and other stakeholders should only be involved if their advice is expected to add value and/or credibility and will be given serious consideration.

Possible Topics for Cooperative Planning

- Options for vegetation management in the district or region.
- Decision-making criteria to evaluate vegetation management alternatives.

How To Plan Cooperatively

- Establish the parameters for the cooperative planning exercise; e.g., the goal, number of participants, location, number of meetings, etc.
- Recruit a few participants from each of the different kinds of organizations; e.g., organized and interested public, other stakeholders.
- Make it as easy as possible for volunteers to participate; e.g., schedule meetings during evenings, weekends, close to home, and give notice well in advance; consider reimbursing participants for their out-of-pocket expenses if this is a barrier to participation.
- Ask them to participate, pointing out the benefits to them of their participation.
- Have an official start and finish to the process.
- Make your expectations clear; e.g., requesting advice rather than offering a role in decision-making, time commitment, etc., and tell them what they can expect of you.

- Use a meeting facilitator who has the skill to bring people with divergent opinions together. Provide background information to help prepare participants in advance.
- Look for common ground; e.g., conditions under which something would be acceptable.
- After the process, give participants feedback on the impact of their involvement.

Some Do's and Don'ts

DO:

- Use the participants' advice whenever possible.
- Involve people early in the process rather than part way through.
- Encourage the expression of differing opinions and of tolerance in the group.
- Hold participants accountable for their behaviour; e.g., not going to the media to "knock" the process.

DON'T:

- Allow destructive conflict and rudeness to take place.
- Allow attendance at meetings to slip — find out why participants are not following through.
- Waste time or, conversely, rush the process too much.
- Ask for comments if you have already decided what you are going to do.

Level 4: Collaborative Action

Collaborative Action is a multi-stakeholder process which gives all participants equal decision-making authority on a vegetation management concern. For example, environmental groups, OMNR resource managers, the forest industry, VMAP, and possibly others could work toward a consensus on a local or provincial level project or issue.

Collaborative Action could include something as simple as planning a joint conference or as complicated as a review board which decides how various policies should be developed or implemented.

Collaborative Action, involving the sharing of decision-making, is frequently needed:

- When expertise from various sectors is required;
- Where ownership and credibility in decisions is needed;
- Where it is important to obtain the acceptance and support of key stakeholder groups in decisions and needed implementation;
- Where resources and action of some form will be needed from others.

Some Possible Areas for Collaborative Action

- Planning and co-sponsoring a conference on the topic of vegetation management alternatives;
- Selection of VMAP research projects and other VMAP priorities;
- Monitoring and evaluation of vegetation management alternative test pilot projects;
- Evaluating and choosing vegetation management strategies locally.

How To Take Collaborative Action

- Keep the working group small (e.g., no more than about 12 people).
- Recruit an equal number of participants from each sector.
- Involve the participants in setting the rules of order for the meetings.
- Choose stakeholders who are in ongoing contact with the broader stakeholder group they represent. This will help them to keep in touch with their constituents' needs during the multi-stakeholder process.
- Clarify the stakeholder's role; e.g., whether they are an official representative of an organization, or else a participant with a particular background and experience.
- Offer to reimburse volunteers for their out-of-pocket expenses and also to consider honoraria, especially if costs are significant or prohibitive to participation, an extensive time commitment is required, and/or other participants are being paid for their time.

Some Do's and Don'ts

DO:

- Start small and test the process — do a pilot project and evaluate it if unfamiliar with a multi-stakeholder process approach to decision-making.
- Be prepared to make compromises.
- Use an independent facilitator or mediator.
- Provide opportunities for participants to "ventilate", but maintain the focus on arriving at compromises which everyone can live with.
- Recognize that all participants have something to contribute.
- Only enter into multi-stakeholder processes that you are committed to follow through on.
- Thank everyone both formally and informally for their participation.

DON'T:

- Try to be a mediator and participant at the same time.
- Informally give some parties more weight or authority than others; e.g., by informing them of meeting dates before others, giving them information you do not share with others, or by letting them dominate the discussion.
- Arbitrarily reject the views of some participants.
- Set an unrealistic deadline for the consensus building process — it usually takes more time than you expect.

C. Summary of Major Steps for Involving the Organized and the Interested Publics

This table summarizes major steps which should be taken to involve the organized and the interested publics.

Organized Public	Interested Public
<ul style="list-style-type: none"> • Establish an ongoing relationship between VMAP and key provincial associations, and with regional/local associations via MNR District Offices. • Invite comments, suggestions, and feedback. • Ask for their help in reaching the interested public; for example, via their membership, publications, and events. • Provide opportunities for them to play a role in developing policies and procedures and deciding upon operational practices. • Provide opportunities for them to participate in multi-stakeholder gatherings. • Provide opportunities for participation in some way in deciding upon VMAP's priorities and for some form of involvement on key VMAP committees. 	<ul style="list-style-type: none"> • Develop/expand/maintain lists of interested people. • Provide general information about VMAP itself and about vegetation management practices in Ontario; e.g., via a newsletter. • Provide opportunities for interaction and for interested individuals to provide their views and to participate in some way; e.g., public forums. • Engage in outreach to reach other members of the interested public; for example, via: <ul style="list-style-type: none"> ◦ Alternative media ◦ Presentations/displays at fairs, parks, conservation areas, etc. ◦ Local media ◦ Other ideas in the text.

Recommendation

- *VMAP should adopt a strategy of public involvement which offers members of the organized and interested publics opportunities to get involved at four different levels:*

Level 1 — Information Sharing

Level 2 — Resource Sharing

Level 3 — Cooperative Planning

Level 4 — Collaborative Action

5. Training of Foresters in Interacting With the Public

The role of the forester is changing, in Ontario as well as elsewhere in North America and Europe.

Foresters used to be left alone by the public to make their own best decisions about how to manage the forest. They could rely upon their scientific and technical expertise in deciding which vegetation management practices would be most appropriate for given situations.

This situation no longer applies. Interacting with the public is now a significant part of the forester's job. Professional foresters now need to use facilitation and public involvement skills on a daily basis.

This represents a significant departure from past practices and requires skills different from those for which foresters have been trained. Thus we recommend that OMNR develop and provide training and support in the following areas:

- Information about the views of various segments of the public regarding herbicide use, as well as about other forest management practices, such as the information provided in this report;
- The legitimacy of the public in playing a role in decisions about how forests are managed, and the consequences of ignoring public concerns (i.e., usually an escalation of demands and increased confrontation);
- The changing role of the forester, along with that of other experts in society, and implications for interaction with members of the public;

- Interpersonal skills — especially listening, how to avoid paternalism, and how to respond when tempers flare;
- Familiarity with alternative formats for engaging members of the public: e.g., one-on-one, small groups, large gatherings; strengths and weaknesses of each, when to use and when to avoid various strategies of involvement, plus practical "how-to's" in using these techniques;
- How to communicate in a way that members of the target audience can understand, which usually means free of jargon and technical language, while at the same time avoiding talking down to people;
- Skills in public speaking;
- Skills in writing for the layperson;
- Skills in media relations (e.g., the importance and "how-to's" of establishing ongoing relations with key media contacts, do's and don'ts of news releases, responding to media questions and requests, controlling media access, dealing with crises and with "hostile" interviews, and how to get coverage for your information);
- Social marketing concepts, why these are important, and how to apply them.

There are a variety of ways in which training could be provided. For example, this could involve the development of a special course or courses on various aspects of public interaction, modifications or additions to existing training venues, self study guides, and other means. It is beyond our terms of reference to specify this or to develop specific curricula.

We do suggest, however, that the training be made as practical as possible. For example, we suggest that it be participative in nature and provide ample opportunities for trying out various approaches and getting feedback. This could be via role plays, videotaping, or involving representatives of stakeholder groups in training sessions.

Training should be provided to everyone involved with VMAP and to all OMNR staff who need to interact with the public.

Recommendations

- *OMNR should develop training and provide support to its staff regarding how to interact with the public;*

- *This should be provided to all VMAP staff and to all OMNR staff who need to interact with the public.*

6. Program Evaluation of VMAP's Public Involvement Initiatives

It is premature to develop a plan for evaluation of VMAP's public involvement initiatives until these have been determined. Following are some preliminary thoughts.

Examples of Evaluation Questions

Following are examples of questions which should be considered in subsequent evaluations of VMAP's public involvement initiatives:

- VMAP's record of success in making contact with its intended target audiences;
- Its record of success in successfully engaging them at various levels of involvement;
- Outcomes of involvement — e.g., public input used in developing the VMAP research program, public input used in vegetation management practices, VMAP's target groups feeling that their views are being heard and taken into consideration;
- Changes in views over time about the acceptability of current vegetation management practices;
- Support for VMAP and its activities and changes over time;
- Views about VMAP's process of public involvement and communications, and ideas about how this could be improved.

Questions regarding evaluation of VMAP's communications activities include:

- What messages did members of the target group get from communications they received?
- Were these the same as the intended messages?
- Did the target audiences find this information helpful? Useful? Relevant? Did they agree or disagree with it? Why or why not?

- What did they think about the manner in which information was provided (e.g., format, clarity, and appropriateness of language)?
- What ideas or suggestions did they have about how VMAP communications could be improved and about other types and forms of information which they feel are needed?

In addition, we recommend:

- Any formal communications (e.g., written materials) should be pretested in advance;
- There should be a periodic review of the overall communications strategy.

Priorities and Methods

- We recommend that priority be given to evaluation of VMAP's interaction with the organized public:
 - This is in keeping with the recommended priority for public involvement to this target group;
 - Numbers of organizations are relatively small, and thus feedback can be obtained fairly easily.
- Recommended methods for evaluation:
 - Ongoing informal contact and feedback.
 - Occasional formal evaluations, via an independent evaluator, using means such as: a short survey, telephone interviews, and/or focus groups.
- We recommend a lesser priority to evaluation of activities directed at the interested public:
 - Evaluation methods could include: intercept interviews with people who view displays/presentations, short questionnaire to people on mailing list, focus groups.
- We do *not* recommend broad surveying of public attitudes. This would be costly, and the action implications of such information are unclear. Surveys also can be construed as political. Specific questions of interest probably can be piggy-backed onto subsequent Forestry Canada surveys at minimum cost.

Evaluation of Forester Training

We recommend that the focus of evaluation of training activities be on identification of competencies developed as a result of the training, and in particular how well they have been put into practice. This could be done through means such as: interviews with staff who have received training, interviews with their supervisors and also with some clients/stakeholders.

Recommendations

- *VMAP should evaluate its success in reaching and engaging the organized and the interested publics.*
- *VMAP should establish a means of obtaining ongoing feedback about what the organized public in particular, and also the interested public, think about its activities and also its approaches to public involvement. This should be supplemented by more formal means of evaluation, carried out by independent evaluators, from time to time.*

7. Conclusion

The goal of VMAP — a long-term reduction in herbicide use in forestry — appears to be consistent with what the public wants. But in order to obtain public support, VMAP must establish its credibility and show that it is taking the interests of the public into account.

For VMAP to establish its credibility it must implement a strategy of public involvement which provides members of the public with an opportunity for meaningful involvement in decision making about the direction of VMAP and about vegetation management practices. The recommendations provided in this report may, at first glance, appear challenging. But they need not be. In our view, the two most critical elements are for VMAP to establish an ongoing relationship with the organized public and to provide them with a role in deciding upon the VMAP research program. Other steps can follow from this.

Experiences in other jurisdictions shows that when the public feels they are excluded from the decision-making process and that their views are not taken into consideration, demands escalate and confrontations arise. This has led to outright bans and severe restrictions on herbicide use in many other jurisdictions in Canada, North America, and Europe.

Conversely, when the views of the public are recognized as legitimate and they are given an opportunity to play a meaningful role in decision making, mutually acceptable compromises can emerge. Evidence from other settings suggests that public involvement can prevent extreme positions from becoming firmly entrenched, can provide authority and legitimacy for decisions that are reached, and can result in the identification of creative solutions to seemingly intractable problems.

APPENDICES

Appendix 1

Annotated Reference List

We have provided brief annotations for the references listed below which are of particular relevance to VMAP.

Agriculture Canada. December, 1990. Recommendations for a revised federal pest management regulatory system. Final report of the Pesticide Registration Review Team.

This report provides the findings of the Review Team which forms the basis for the new federal pesticide regulatory system which is now being implemented.

Agriculture Canada. February 3, 1992. Federal pesticide regulation system revised. News release.

Ajzen, I. and Fishbein, M. 1977. Attitude-behavior relations: A theoretical analysis and review of empirical research. Psychological Bulletin 84(5):888-918

Alternatives.

This magazine, from the University of Waterloo, provides well-reasoned articles from an environmental perspective.

Bachelard, E.P. 1979. The future of the forested environment. Australian Forestry 42(2):100-109.

B.C. Hydro. June 1990. Pest Management Strategy.

B.C. Hydro. Environmental Resources, Pest Management. B.C. Hydro's Approach to Vegetation Management Near Powerlines. (Undated).

These two documents discuss B.C. Hydro's approach to vegetation management which involves minimal use of herbicides.

Behan, R.W. 1988. A plea for constituency-based management. American Forests 4(7&8):46-48.

This brief article makes a case for managing forests according to the desires of those who know and care about forests, not the silent majority.

Bolle, A.W. 1971. Public participation and environmental quality. Natural Resources Journal 11(3):497-505.

Breton, P. and Tremblay, H. 1990. Le secteur forestier Suedois. Rapport de mission d'étude. Forêts Canada, Région du Québec.

This report (English translation prepared by MNR available) discusses the nature of public concern regarding herbicide use in Sweden, how this led to a ban which is still in effect, and how the forest industry has adjusted to this.

Burrus-Bammel, L.L. 1978. Information's effect on attitude: A longitudinal study. Journal of Environmental Education 9(4):41-50.

This paper reports on the long-term effects of an environmental education program sponsored by the West Virginia Forest Industries Camp on attitudes and knowledge (both increased) as well as the relationship between attitudes and knowledge. This paper also has a very useful, short summary of the pertinent social psychology literature regarding the relationship between attitudes, behaviour and knowledge.

Canadian Council of Forest Ministers. March, 1992. Sustainable forests: A Canadian commitment.

Canadian Gallup Poll Limited. 1986. A survey of the public's perceptions of and attitudes to the forestry industry in Canada. Canadian Forestry Service.

Canadian Nature Federation. 1989. Forest management policy.

The CNF Forest Management policy calls for a drastic reduction, or elimination if possible, of herbicides. It also calls for the legislative right of meaningful public involvement, with full access to information, in all aspects of forest management.

Carrow, J.R. 1991. Future trends in forest pest management. Forestry Chronicle 67(5):468-472.

An excellent article on what the future holds for forest pest management. It specifically addresses herbicide use and public perception.

Carrow, R. February 5, 1992. Opportunity among the trees. Letters to Ed.

Comstock, G. 1989. Genetically engineered herbicide resistance, Part Two. Journal of Agricultural Ethics 2(4):114-137.

An excellent article focusing on the moral propriety of publicly funded genetically engineered herbicide resistance research. It provides a thorough discussion of the degree of risk associated with herbicide use as perceived by the public and scientific versus subjective arguments for and against herbicide use.

Culhane, P.J. 1981. Public lands politics: Interest group influence on the Forest Service and the Bureau of Land Management. Resources for the Future, John Hopkins Press. Baltimore.

Several chapters of this book deal with group influence and local public lands management. Many controversial public lands management issues are studied, however, herbicide use is not covered. Chapters 5 and 7 in particular address the spectrum of public, agency, and industry interests in forestry, and their influences and interactions with each other.

Dare, B. 1985. They stopped the spraying. Organic Gardening March 1985: 102-105.

Dohrenbusch, A. 1992. Economic and ecological aspects of forest vegetation management. Paper presented at IUFRO meeting, Berlin.

This paper discusses vegetation management in Germany. While Dohrenbusch feels that there is a place for the use of herbicides, he points out that many states within Germany have banned its use and elsewhere use is now severely restricted.

Dohrenbusch, A. and Frochot, H. 1992. Forest vegetation management in Europe. Paper presented to conference in Auburn, Alabama.

This paper presents the results of a survey to forestry representatives throughout Europe. It discusses current practices and trends in vegetation management throughout Europe where, except for Britain, herbicides are now used only minimally or not at all.

DowElanco. Undated. Share: An issues management workshop to build public confidence. Workshop workbook. DowElanco.

DowElanco. 1990(a). Public Affairs: Make sure you're a step ahead. DowElanco.

DowElanco. 1990(b). Landowner Notification: How to develop a program to enhance community trust. DowElanco.

These documents provide advice to pesticide applicators about how to interact with the public. Among other considerations, they stress the need to be proactive and to approach people before they become concerned and raise objections.

Dunster, J.A. 1990. Forest conservation strategies in Canada: A challenge for the nineties. Alternatives 16(4)/17(1):44-51.

This is a comprehensive, wide-ranging article, with many citations, which discusses the adequacy of various conservation strategies, from the environmental perspective, arguing for an approach which goes beyond mere fibre production.

Environics Research Group. 1992(a). National survey of Canadian public opinion on forestry issues, 1991. Highlights from a survey commissioned by Forestry Canada. Forest Planning Canada 8(3):25-26.

Environics Research Group Limited and Corporate Research Associates CROP Inc. 1992(b). 1991 national survey of Canadian public opinion on forestry issues. Forestry Canada.

This report presents the findings of the most recent survey of public opinion regarding forestry. Among other findings, the survey found stronger public concern about protection of the environment than about jobs, very strong objection to the use of herbicides, and no significant urban-rural differences.

Fishbein, M. and Ajzen, I. 1975. Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, Mass: Addison-Wesley.

Fishbein and Ajzen have done arguably the most useful and oft-cited work exploring the relationship between attitude and behaviour.

Fitzsimmons, M. 1985. Saskatchewan forest spraying held off for third year. Alternatives 13(1):67-68.

Forest Policy Panel. 1992. Our future, our forests. Ontario Ministry of Natural Resources Tabloid.

Forestry Research Advisory Council of Canada and Forestry Research Advisory Committees in the Provinces and Territories. 1992. Forest research priorities in Canada, 1991: An overview for the Canadian Council of Forest Ministers. Forestry Chronicle 68(1):121-125.

Gale, R.P. 1973. Communicating with environmentalists: A look at life on the receiving end. Journal of Forestry 71(10):653-655.

Green, K. 1984. Pesticide risk acceptability: Science or politics. Pp. 1-11 in Proc. 6th Annual Forest Vegetation Management Conference, Redding, CA.

This paper discusses how the public views risks. It points out that risk assessment is more a matter of politics than of science.

Gregg, N.T. July, 1992. Sustainability and politics: The cultural connection. Journal of Forestry 90:17-21.

Griss, P. 1992. A forester's guide to the environmental movement. *Forestry Chronicle* 68(2):241-244.

This paper discusses the nature of the environmental movement, showing that while many different groups are collectively lumped under this broad category, in fact they can be very different from one another. He points out that an understanding of the nature of environmental groups is important to foresters.

Hannah, J. 1992. Integrated pest management - simple solution or costly experiment? Pp.30-55 in Parks Making the Difference: 36th Annual Educational Seminar Proceedings. Humber College, Etobicoke, Ontario: Ontario Parks Association.

Harris, S., Stephenson, G. and Wren, C. April, 1992. A scientific response to the urban anti-pesticide lobby. Green Care Horticultural Association.

Health Promotion. Winter 1988/89. Special theme issue: Social marketing - a useful tool for health promotion. *Health Promotion* 27(3).

Hendee, J.C., Clark, R.N. and Stankey, G.H. 1974. A framework for agency use of public input in resource decision-making. *Journal of Soil and Water Conservation* 29(2):60-66.

This article provides a framework and model for using public input. The model was developed from two years of studying public involvement processes.

Insight Canada Research. 1990. Survey of the general public: Summary of findings. Ontario Ministry of Natural Resources.

Integrated Vegetation Management Association of B.C. 1992. January 22-23, 1992 Conference Proceedings. Tsasswassen, B.C.

This association publishes its annual proceedings available through the Integrated Vegetation Management Association of B.C., P.O. Box 48861, Bentall, Vancouver, B.C. V7X 1A8; (\$15.00 plus GST). These serve as an excellent set of notes of speakers from the forestry, industrial (e.g., hydro), municipal/urban, and environmental (e.g., B.C. Ministry of Environment, Lands and Parks) sectors.

Johnson, P.T. January-February 1993. How I turned a critical public into useful consultants. *Harvard Business Review* 71(1):56-66.

Kimmins, J.P. 1991. The future of the forested landscapes of Canada. *Forestry Chronicle* 67:14-18.

This article, based upon a presentation at the Globe 90 Conference in Vancouver, presents a very reasoned and persuasive discussion about changes in public attitude and how, although the public may not be right in all respects, the forest industry must listen to them. It also points out that many foresters and scientists have urged for many decades that there should be a change in the philosophy and conduct of forestry in Canada, and that this public concern can be a positive force for forestry.

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A current article citing some relevant statistics regarding the American public's perceptions about pesticide use. Although the article focuses on pesticide use in agricultural food crops, many of the concepts and findings are applicable to pesticide application in general.

Knopp, T.B. and Caldbeck, E.S. 1990. The role of participatory democracy in forest management. *Journal of Forestry* 88:13-18.

This article describes the paternalism of forestry professionals and discusses how and why to involve the public.

Kotler, P. and Roberto, E. 1989. Social marketing: Strategies for changing public behaviour. The Free Press, New York.

Krueger, R.A. 1988. Focus groups: A practical guide for applied research. Sage Publications, Newbury Park, California.

Kuhn, T.S. 1962. The structure of scientific revolutions. The University of Chicago Press, Chicago.

Lautenschlager, R.A. and Bowyer, R.T. 1985. Wildlife management by referendum: When professionals fail to communicate. *Wildlife Society Bulletin* 13:564-570.

Lee, R.G. 1991. Four myths of interface communities. *Journal of Forestry* 89(6):35-38.

An especially good discussion about myths and realities of rural localities pointing out, for example, that several areas tend to consist of both "newcomers" and "long-term residents" who move in separate social circles. Lee specifically discusses views re herbicides, how local concerns can broaden in scope, and implications for forest managers.

Leis, D. 1985. Forest herbicides: Saskatchewan stops the spray. *Alternatives* 12(2):57-59.

This article describes, from an environmental perspective, how "an unlikely coalition of Northern Saskatchewan municipal leaders, natives, environmentalists, church activists, and senior citizens stopped a forest herbicide spray test", after their concerns were initially ignored and how this opposition was broadened to a call for "a different approach to forest management" which led to a suspension of spraying throughout the province.

Leiss, W. August, 1991. Guide to consultation processes: A report for the Pesticides Directorate, Agriculture Canada.

This guide, which was prepared as a basis for a workshop for staff of the Pesticides Directorate, provides useful guidelines for interacting with the public.

Lush, P. September 18, 1992. Industry looks beyond current woes. *Globe and Mail*.

This presents an interesting summary of a recent forest industry conference in Vancouver. It indicates how representatives from the forest industry and from environmental groups are now working more cooperatively. It also points out how, if the industry adopts new practices to accommodate the new paradigm, this can indeed be profitable.

Manfredo, M.J., Fishbein, M., Haas, G.E. and Watson, A.E. 1990. Attitudes toward prescribed fire policies. *Journal of Forestry* 88(7):19-23.

Mater, J. 1977. Citizens involved: handle with care! A forest industry guide to working with the public. Timber Press, Forest Grove, Oregon.

Although dated, this is the best book found to date regarding the forest industry working with the public and rethinking commonly held assumptions about the roles of professional foresters.

Mater, J. 1992. A paradigm shift for marketing the forest industry - from public relations to research. Paper presented to the Charleston, South Carolina meeting of the Forest Products Research Society.

This paper urges the forest industry to stop fighting the will of the public and instead adopt a marketing paradigm to produce products which are acceptable to the public.

Mater, J. and Mater, C. 1977. Public participation in forest industry management decisions. *Forest Products Journal* 27(8):16-18.

Mater, J., Mater, M.S. and Mater C.M. 1992. Marketing forest products: Gaining the competitive edge. Miller Freeman, Inc., San Francisco.

This book presents "how to" information about how the forest industry can take a marketing approach to address public concerns and worldwide competitive demands.

McLean, H.E. 1991. Paying the price for old-growth. American Forests Sept/Oct:22-27.

Merchant, H.F. and Williams, J.J. 1985. Effects of a forest resource education program on Grade 6 students. Chalk River, Ontario: Petawawa National Forestry Institute, Canadian Forestry Service.

Mitchell, J.G. 1992. The council, the alliances, and the body politic. Wilderness Spring:18-22.

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Ontario Ministry of Agriculture and Food. Collection of written resources (note dates not always known):

- *Baker, H.R. Identifying Needs: Notes compiled from the Program Planning Process, in Blackburn, D.J. Ed. Extension Handbook.*
- *Byvelds, R. and Newman, J. Understanding change. Rural Organizations and Service Branch, OMAF Factsheet, Order No. 91-014, February 1991.*
- *Robinson Jr., J.W. Ten ways to fail in community development. A two-page handout.*
- *Rural community development. An assortment of written sheets and materials assembled by OMAF.*
- *Rural community development consultation proceedings: September, 1991. Rural Organizations and Services Branch.*
- *Rural Routes '92 - Ontario's Showcase of Resource Planning. Program and plan brochure. 1992.*
- *TIP Sheet: Identifying current leaders: positional approach from working with our publics. Module 3: Developing leadership.*
- *TIP Sheet 14: Structured brainstorming. From Working with our publics. Module 5: Working with groups and organizations.*

- *Tips for enabling others to act empowered - a one page handout.*

Ontario Ministry of Natural Resources. 1992. Branching Out. Tabloid.

Ontario Ministry of Natural Resources. 1992. Miscellaneous factsheets and pamphlets on their Sustainable Forestry Initiative.

O'Riordan, T. 1971. Public opinion and environmental quality: A reappraisal. *Environment and Behavior* Vol. 3.

Ostheimer, J.M. 1977. The forest service meets the public: decision-making and public involvement on the Coconino National Forest. Fort Collins, Colorado: Eisenhower Consortium for Western Environmental Forestry Research.

This is a good report, looking at a variety of land management issues over a 10-year period. It evaluates those cases having public involvement activity. The report has a most relevant section entitled Public Involvement Lessons.

Parks and Recreation. 1990. Polling and public involvement programs. *Parks and Recreation* 25(July):19.

Patton, M.Q. 1990. Qualitative evaluation and research methods. 2nd edition. Sage Publications, Newbury Park, California.

Pease, D.A. 1992. Sustainable development: A game with no losers. *Forest Industries* 119(3):22-23.

Rich, S.U. (Ed.) 1972. Public relations in an era of public involvement: Challenge for the timber industry. Proceedings of a Current Issues Conference. University of Oregon Forest Industries Management Centre, Eugene, Oregon.

Rusk, J. September 2, 1992. Environmentalists saving themselves. *Globe and Mail*.

This is a cogent analysis of changes within the environmental movement. For example, it discusses how the environmental movement is moving from a confrontational to a cooperative mode in working together with government and industry in developing solutions.

Shands, W.E. 1991. Problems and prospects at the urban-forest interface. *Journal of Forestry* 89(6):23-26.

A good overview of the challenges for the forest industry regarding urban/forest interface and forest management issues.

Shrader-Frechette, K. 1991. Risk and rationality: philosophical foundations for populist reforms. U of California Press, Berkeley, CA.

Shrader-Frechette seeks a middle path between industrial charges of scientific illiteracy and populist charges of technological oppression, arguing for a new paradigm of when acceptance of public hazards is rational. This book discusses many aspects of risk assessment, comparing "perceived risk" seen by laypersons and "actual risk" calculated by experts from a variety of different perspectives.

Steel, B.S., List, P. and Shindler, B. 1992. Oregon State University Survey of Natural Resource and Forestry Issues: Comparing the Responses of the National and Oregon Public Surveys.

Susskind, L. and Cruikshank, J. 1992. Breaking the impasse: Consensual approaches to resolving public (forest) disputes. Forest Planning Canada 8(3):7-21.

Tanz, J.S. and Howard A.F. 1991. Meaningful public participation in the planning and management of publicly owned forests. Forestry Chronicle 67(2):125-130.

Taylor, D.M. 1992. Disagreeing on the basics: Environmental debates reflect competing world views. Alternatives 18(3):26-33.

This is a thoughtful article which contrasts two competing world views: the expansionist world view, with a focus on "wise management", and the ecological world view, with the focus on "preservation".

United Nations Conference on Environment & Development. 1992. Agenda 21.

USDA Forest Service, Pacific Northwest Region. 1988. Record of decision on managing competing and unwanted vegetation: Final environmental impact statement.

This is an important document setting out a new strategy for vegetation management in the Pacific Northwest. The new approach permits herbicide use, but only on a limited basis, and emphasizes the critical importance of public involvement.

USDA Forest Service. 1990? A guide to conducting vegetation management projects in the Pacific Northwest Region. Forest Pest Management, Pacific Northwest Region.

This guide provides some useful guidelines for involving the public with respect to specific vegetation management projects.

USDA Forest Service. (Undated). Herbicide Information Profile. [Separate packages on:] Triclopyr, Picloram, Glyphosate, Hexazinone. Pacific Northwest Region.

Vaux, H.J. 1982. Forestry's hotseat: The urban/forest interface. *American Forestry* 88(5):37,44-46.

A good overview of the challenges for the forest industry regarding urban/forest interface and forest management issues.

Von Schuckmann, S. January 23, 1992. Future IPM trends for forestry and industrial vegetation management. Paper presented to Integrated Vegetation Management Association.

An especially useful article on the future of vegetation management which looks at such things as the situation in the Pacific Northwest, describes the key shifts in resource management which have impact on vegetation management and future directions and conclusions.

Wagner, R.G. 1992(a). Research directions to advance forest vegetation management in North America. *Canadian Journal of Forest Research* (accepted).

Wagner, R.G. 1992(b). Vegetation Management Alternatives Program: Program Prospectus, April 1992. Ontario Ministry of Natural Resources, Ontario Forest Research Institute, Sault Ste. Marie, Ontario.

Wagner, R.G., Buse, L.J., Bell, F.W. and Lautenschlager, R.A. 1992. Vegetation Management Alternatives Program: Annual Report 1991-1992. Ontario Ministry of Natural Resources, Ontario Forest Research Institute.

Wallinger, R.S. 1990. Editorial industry challenge: heed public perceptions. *American Forests* July/August:6.

Wallinger, a past President of the American Forestry Association, warns his colleagues in this article that they will not be able to ignore public views about how forests should be managed.

Walstad, J.D. and Dost, F.N. 1986. All the king's horses and all the king's men: The lessons of 2,4,5-T. *Journal of Forestry* 84(9):28-33.

Wiebecke, C. 1976. The influence of public opinion on forest policy (Original Title: Über den Einfluß der öffentlichen Meinung auf die Forstpolitik). *Forstwissenschaftliches Centralblatt (Forestry Central News)* XCV(1):89-95.

Williamson, R. September 25, 1992. On the far side of the hill. *Globe and Mail*.

Zimmerman, A.H. February 1992. Environmental issues dominate Canada's future. 2000 and Beyond, a supplement of February 1992 Pulp and Paper Journal and the Tappi Journal:49-50.

The Chairman of Noranda Forest Inc. tells his colleagues in this article that environmental concerns are here to stay.

Appendix 2

Annotated Contact List

We have provided brief annotations for the key informants listed below whose background and/or experience is of particular relevance to VMAP.

Theresa Aniskowicz	Coordinator, Conservation Programs, Canadian Nature Federation
Adela Backiel	Specialist in Natural Resource Policy, Congressional Research Service, Washington, D.C.
Jacob Boateng	B.C. Ministry of Forests
Errol Caldwell	Forest Pest Management Institute, Forestry Canada
Dave Caraher	U.S. National Forest Service, Pacific Northwest Region
	<i>Key staff responsible for development of the EIS through a multi-stakeholder participative process.</i>
Rod Carrow	Dean, Faculty of Forestry, University of Toronto
	<i>Has done extensive writing and research on sustainable forestry. Represented forestry on Agriculture Canada's Pesticide Registration Review Team. Excellent sounding board for ideas.</i>
Frank Cedar	Information Director, Pesticides Directorate, Agriculture Canada
	<i>A good contact regarding the approach to public education within the Pesticides Directorate.</i>
Dan Cooligan	Forest Policy Branch, OMNR
M.J. de Saint Victor	Manager, National Pesticides Information Service, Pesticides Directorate, Agriculture Canada
Dwayne Dye	Head of Policy and Planning, Saskatchewan Department of Natural Resources, Forest and Lands Branch

Linda Gilkeson	Integrated Pest Management Coordinator, B.C. Ministry of Environment
	<i>Active in the Integrated Pest Management approach and in the Integrated Vegetation Management Association of B.C. A very good resource for B.C. contacts.</i>
Richard Greaves	Head, Biological Control Unit, Commonwealth Scientific and Industrial Research Organisation (Montpellier, France)
Kass Green	President, Pacific Meridian Resources
	<i>Experienced in interfacing with local public in vegetation management projects.</i>
Norma Grier	Executive Director, Northwest Coalition on Alternatives to Pesticides
	<i>Firsthand experience in vegetation management policy development through multi-stakeholder process.</i>
Ann Hankinson	Ontario Ministry of Agriculture and Food
John Hannah	Superintendent of Parks, City of Cambridge (Ontario)
Steve Horsley	Plant Physiologist, Forestry Science Lab, U.S. Forest Service, Warren, PA
	<i>Very experienced in conducting research in effective and safe application of herbicides, and in presenting research to stakeholders as a basis for development of an EIS for Allegheny Forest.</i>
Craig Howard	Forest Pest Management Institute, Forestry Canada
John Johnston	Guelph Agriculture Centre, Ontario Ministry of Agriculture and Food
Ivo Krupa	Director, Pesticide Management Secretariat, Agriculture Canada
Gary Larsen	U.S. National Forest Service, International Forestry Division

Avrim Lazar	Executive Director, Bureau of Environmental Sustainability, Agriculture Canada
Len Lenteigne	Forestry Canada Maritimes Laboratory, Fredericton
Lloyd Manchester	Executive Director, Canadian Earthcare Society
Jean Mater	Vice-President, Forest Products Marketing Services Division, Mater Engineering, Corvallis, Oregon <i>The leading thinker, writer, and practitioner in the area of public involvement in forestry. An experienced resource person with a thorough understanding of the interaction between public values and economic issues. Recipient of the Gottschalk Award of the Forest Products Research Society.</i>
Blair McRae	Issues, Planning and Priorities Division, Pesticides Directorate, Agriculture Canada <i>Responsible for the development of guidelines for public consultation.</i>
Geoff Munro	Forest Policy Branch, OMNR
Guy Paquette	Product Development Associate, Monsanto Canada
Peter Perrin	Interim Executive Director, Pest Management Alternatives Office <i>This Office, which is just being established as a private non-profit arm's length organization to Agriculture Canada, is charged with identifying alternatives to the current use of pesticides in all sectors. In many respects, its mandate is similar to VMAP.</i>
Karen Pietrzak	Consultation/Communications Coordinator, OMNR Forest Policy Panel
Fred Pollett	Director General, Science and Sustainable Development Directorate, Forestry Canada

Steve Radosevich	Oregon State University, Department of Forest Science <i>Professor involved centrally in an exciting research project on sustainable forestry. Research emphasizes quantitative and qualitative as well as iterative research methodologies and a mix between forestry and social science.</i>
Chris Ranger	Information Coordinator, Pesticides Information Division, Pesticides Directorate, Agriculture Canada
Ray Read	Pest Biologist, B.C. Hydro <i>Active party in a multi-stakeholder research project which explores alternatives to herbicides. Stakeholders are involved in decisions which affect the way in which alternatives are tested from the beginning and throughout the monitoring and evaluation of the alternatives.</i>
Wayne Roberts	Plant Industry Branch, Guelph Agricultural Centre
Bev Robson	Integrated Resource Education and Training Section, OMNR
Wendy Rose	Communication Manager, Crop Protection Institute
Hajo Versteeg	Independent Consultant <i>A lawyer and consultant who specializes in environmental issues. An active participant in Agriculture Canada's Pesticide Regulation Review Process.</i>
Faye Shon	U.S. National Forest Service, Pacific Northwest Region <i>Key staff responsible for implementation of EIS - has some perspectives on the impracticalities of implementation of the EIS policies and the limitations of the multi-stakeholder process.</i>
Pritam Singh	Coordinator, Forest Pathology, Science Directorate, Forestry Canada
Craig Summers	Dept. of Psychology, Laurentian University

Gord Surgeoner

Dept. of Environmental Biology, University of Guelph

Larry Taylor

Monsanto - Western Canada Region

John Williams

Petawawa National Forest Institute, Forestry Canada

Appendix 3

VMAP Focus Group Participants

North Bay Professionals

- 4 - forest industry
- 4 - MNR foresters/resource managers
- 1 - MNR biologist

North Bay Organized Public

One representative from each of:

Northern Lights Resort and Bear
Management Association
Ministry of Tourism and Recreation,
North Bay
Saug Lake Pickerel Hatchery Cottage
Association
Trout Lake Conservation Association
Nipissing Naturalist Club
Nipissing Environmental Watch
Northern Ontario Tourist Outfitters
Association
Northcare
North Bay Mattawa Conservation
Authority
Ontario Fur Managers Inc.
Nipissing University and Friends of
Lake Nipissing
Lake Nipissing Partners in Conservation
Union of Ontario Indians
Northwatch

North Bay Interested Public

- 2 - educators
- 2 - outdoors clubs
- 2 - outdoors participants

Toronto Organized Public

- 1 - Sierra Club
- 2 - Toronto Environmental Alliance
- 1 - Federation of Ontario Naturalists

North York Organized Public

One representative from each of:

Forests for Tomorrow
Pesticide Action League
South Lake Simcoe Naturalists
Ambassador Angling Services
Ontario Parks Association
and 1 educator

Lindsay Organized Public

- 2 - County officials
- 3 - educators
- 2 - forest industry
- 2 - Ministry of Environment
- 1 - First Nations
- 1 - Save the Ganaraska Again
- 1 - Soil and Crop Institute

Lindsay Interested Public

- 1 - educator
- 5 - woodlot owners
- 1 - outdoors participant
- 1 - unknown

Carleton Place Professionals

6 - MNR foresters
5 - MNR biologists
1 - forest industry
1 - conservation authority
1 - MNR communications

Thunder Bay Interested Public

2 - camping association
1 - university professor
1 - municipal parks dept.
1 - local group
4 - unknown

Carleton Place Organized Public

Representative from each of:

CPAWS
EcoWatch
Ottawa Field Naturalists
Mississippi Valley Field Naturalists
Rideau Valley Field Naturalists
Lanark Fish & Game Club
Woodlot/Sawmill Operators Association
Friends of the Mississippi
Palmerston Fish and Game Club (2)
Wetlands Preservation Group (2)

Carleton Place Interested Public

6 - educators
2 - private consultants
1 - local group
2 - unknown

Thunder Bay Organized Public

Representative from each of:

Friends of the Forest (2)
Environment North
Ontario Federation of Anglers
and Hunters
Thunder Bay Field Naturalists (2)
Fort William First Nation
1 - unknown

Appendix 4

Moderator's Guide

1. Knowledge of herbicides and their use

- Has anyone heard of or is anyone familiar with the practice of forest regeneration? What do you know about it?
- Has anyone heard of or is anyone familiar with the use of herbicides in forest regeneration? What do you know about it?
- What words or phrases come to mind when you think of the word herbicide?
- How do herbicides and pesticides differ?
- What, if anything, do you know about the herbicide regulation process? Do you believe it protects your safety?
- What, if anything, do you know about how herbicides are applied?
- Why do you think herbicides are used? What, if anything, would happen if herbicides were not used in forestry?
- Would better or more technical information affect your views?
- Do you think use of herbicides is consistent with or inconsistent with good forest management practices?

2. Attitudes about herbicide use (Some of these points may have come out in questions above on knowledge)

- What are your thoughts, either positive or negative, about herbicide use in forest regeneration? How strongly do you feel about using or not using herbicides? What level of herbicide use is appropriate, more or less, and why?
- What, if anything, do you think would happen if herbicides were not used in forest regeneration? What makes you think that? (overlap with previous section) Do you think forest regeneration is a priority in the management of Ontario forests? Why or why not? Do you think herbicide use in forest regeneration is a priority as a forest management strategy? Why or why not?

- Do you use herbicides at home on a lawn or in a garden? How do you feel about herbicide use in this case? How strongly do you feel about using or not using herbicides at home? How is it different, if at all, than using herbicides in forest regeneration?

3. *Conditions for herbicide use*

- Under what conditions, if any, would herbicide use in forest regeneration be acceptable to you? Probe about current OMNR and Forestry Industry conditions of use? (what are these?) Which of these conditions are the most critical?
- Under what conditions would herbicide use in forest regeneration be unacceptable to you? Why? What, if anything, would make you feel that herbicide use in forest regeneration is acceptable?
- What kinds of risk are involved in the use of herbicides? How much risk is there? What level of risk, if any, is acceptable to you? How do the risks to you of herbicide use in forest regeneration compare with the risks to you in agriculture and lawn care?
- Who is credible to you when it comes to information about herbicide use in forests. Who do you trust or believe? Why? Who wouldn't you trust or believe? Why?
(What about politicians, Forestry Canada, university professors, OMNR staff, scientists who work for OMNR, chemical companies, the media, or others?)

4. *Acceptable alternatives to herbicides*

- What do you think/know about the following alternatives to managing competing vegetation? Are any acceptable to you? Why? Why not? What alternatives used to manage competing vegetation in forest regeneration are unacceptable? Why? What do you think about the practicality of the alternatives.
 - a) Manual/mechanical cutting - hand tools, brushsaws, small equipment
 - b) Prescribed fire - e.g., controlled burning
 - c) Machines - e.g., site preparation equipment
 - d) Grazing animals - e.g., sheep or cattle
 - e) Mulches - e.g., material placed around base of seedlings to keep down competition

- f) Cover crops - e.g., establishment of less competitive plants such as clover
- g) Ground applied herbicides (as opposed to aerial) with machines, backpack sprayers or injection systems.

Probes: North versus South

5. Interest in involvement regarding the future use of herbicides in forest regeneration

- In what way, if any, could you see yourself being informed or involved regarding herbicide use in forest regeneration in the future?

(Possible probes - What conditions would make this informing/involvement effective? Frequency, duration, time? Ideas about, reactions to possible models of involvement; e.g., information - newsletters, media, mailings; personal involvement - stakeholder forums, task groups, advisory committees, joint decision making, others? (For organized public - role of your organization)

- What would be the strengths of bringing representatives of opposing views together over the issues related to herbicide use in forest regeneration? Why do it? What would be the weaknesses? Why not do it? Would you or your organization be willing to work together with public and private forest industry to work out compromises? Would this work - under what conditions? What should be avoided? Why?

6. Words of advice for OMNR about working with the organized/interested public on herbicide use in forest regeneration?

- How high a priority is it for OMNR to interact with the interested public about herbicide use in forest regeneration?
- What should OMNR do/say in educational programs for foresters to prepare them for working with the public?
- What should OMNR foresters do to effectively involve/inform the public regarding herbicide use or use of other alternatives in managing competing vegetation in forest regeneration?
- Any other parting words of advice for OMNR about herbicide use in forest regeneration and/or interacting with the public on this topic?

Appendix 5

Detailed Focus Group Findings

This Appendix contains detailed findings arising from the focus group research. The findings from each focus group are identified as follows:

- "Interested Public" focus group findings are in plain text;
 - *"Organized Public" focus group findings are in italicized text;*
 - **"Professionals" focus group findings are in bold text.**
- * — one asterisk per group is used when a similar comment is made by a participant(s) in more than one group of the same type (either interested public, organized public, or professionals).
- (O) — is used when a similar comment is made by a participant(s) in the "organized public" focus group.
- (P) — is used when a similar comment is made by a participant(s) in the "professionals" focus group.

Some Key Points to Note

- When participants were asked to comment on various topics to be discussed in the focus groups, they often spontaneously raised their own concerns.
- Because there were: 1) so many concerns raised, 2) in most cases, large-sized focus groups, and 3) a substantial number of topics to be discussed, it was neither possible nor appropriate to poll the members of each group on each of the concerns raised. Therefore, the concerns raised in this section are indicative of the kinds of concerns participants have about herbicides and/or forest regeneration and/or interaction with the public.
- However, focus group participants were strongly encouraged to express their truthful opinions during the focus groups whether or not their opinions were commonly held by others in the group. Participants were also encouraged to point out when they disagreed with other participants on a particular topic. More often than not, participants either remained neutral while others spoke or used non-verbal indications that they agreed in some way with the concerns/opinions that were being expressed by other participants.

A. Awareness of and Concerns about Herbicide Use in Forest Regeneration

i. Familiarity with Herbicide Use in Forest Regeneration

- During the first part of the discussion about the participants' familiarity with herbicide use in forest regeneration, the participants began to raise their concerns and beliefs spontaneously. While many participants in the "interested public" focus groups did not know specific details about herbicide use in forest regeneration, many did have concerns and a few offered encouraging comments on the subject.
- *The participants in the "organized public" focus groups also raised concerns and stated beliefs in the early discussion about their familiarity with herbicide use in forest regeneration. However, more participants in the "organized public" focus groups made reference to such things as:*
 - *names of some herbicides - Round Up; 2,4-D*
 - *inert substances*
 - *regeneration implies tree planting*
 - *more hardwoods coming back once conifers are harvested*
 - *natural succession*
 - *forest regeneration as it is currently done is not a natural process*
- *Members of the North Bay "organized public " focus group commented specifically by stating such things as:*
 - *forest regeneration is either natural or artificial - artificial is clearcut, plant, tend - natural has no need for same process***
 - *forest regeneration involves many factors including conifer vs. hardwood and man's intervention*
 - *the Boreal forest is mainly softwood and different than southern Ontario - North has different scope, size, access, seasons*
 - *herbicides "knock back" competing vegetation so that the species of choice has less competition.*
- Most members of the "interested public" were familiar with the fact that herbicides are used to kill plants which interfere with the growth of tree seedlings during forest regeneration (O). Some of the information sources noted by participants in the "interested public" focus groups were newspapers, OMNR videos, publications from groups like the FON, canoeing/camping organizations, high school studies, Canadian Geographic magazine, television documentaries, past work experience for OMNR (e.g., in the 80's), discussions with OMNR staff, and forest industry staff.

- It was apparent from general discussion that professionals were very familiar with what a herbicide is and why herbicides are used in forest regeneration.

ii. Familiarity with the Differences between Herbicides and Pesticides

- Most participants in the "interested public" focus groups did not know that herbicides are a sub-set of pesticides; many people thought that pesticides only kill animal life such as insects.
- *The participants' knowledge of the differences between herbicides and pesticides varied a great deal in the "organized public" focus groups. For example, in North Bay everyone in the "organized public" focus group thought herbicides were for vegetation management and pesticides were for insect and animal control; whereas, in North York, Toronto, and Carleton Place, all participants knew that herbicides are a type of pesticide and pesticides refer to all the 'cides'; and in Thunder Bay, some did and some did not know the difference.*

iii. Familiarity with Methods of Application

- Most participants in the "interested public" focus groups did not know specifically how herbicides are applied in forest regeneration but most thought that aerial application was prevalent. The application methods noted were:
 - plane and helicopter aerial spraying
 - tanker vehicles
 - people spraying with tanks carried on their backs
 - stem injection
- *Participants in the "organized public" focus groups seemed to imply that broadcast, aerial applications prevailed**. "don't spray everything -- only spray a percentage". Other application method noted were:*
 - *limited ground application -- "a little with skidders"*
 - *stump applicators - bullet form into tree***
 - *back pack*
 - *ATV's with spray tanks*
- One participant, an OMNR resource technician, was very familiar with the aerial application of herbicides in the North Bay area. He was very supportive of this form of application and sees it as the "most effective landscape management tool available today to achieve goals of fiber, biodiversity and aesthetics". Another OMNR forester in the group was familiar with herbicide application methods and stated that "ground spraying may be most

effective" but he prefers more intensive site preparation and better tree planting to minimize the need for herbicide application. A participant in this group also noted that OPFA members had agreed that aerial spraying was not necessary. This participant predicted that aerial spraying would "be out" in two years.

iv. Familiarity with the Herbicide Regulation Process

- Some people in the "interested public" groups were familiar with the herbicide regulation process. In most groups of "interested public", approximately one to three people in each group had some knowledge of herbicide application and, therefore, some knowledge of the regulation process. Their knowledge came from either their education, some had forestry degrees; from related work experience, for example, some had worked for OMNR; or from use of herbicides in regenerating private woodlots or other lands. One participant stated - didn't know much about the regulatory process but if it is an arm's-length organization, then it's probably okay.
- *Most participants in the "organized public" focus groups knew something about the regulatory process. Very few said they knew nothing about it. As above, a few had some background in either herbicide registration or in licensing for application. Some comments from participants about what they knew of the regulatory process were:*
 - *know that herbicides are tested and regulated*
 - *know chemicals are tested for one year and the results of the tests come out in two years - chemical companies do not want to wait ten years to register the product - therefore, the results can be biased, the process too short and the long term effects come out after the products are in use.*
 - *many products being used now have not been fully tested - U.S. is reviewing many products - hopefully Canada will too*
 - *most participants in the North York focus group knew that federal agencies, MOE and OMAF have a role to play in herbicide regulation and that the licensing process involves an intensive course and examination process*

Many participants expressed concerns about the regulatory process. These are noted below in the section about expressed concerns.

- In North Bay, participants in the "professionals" focus groups who used herbicides in their jobs knew more about the regulation process than participants who did not. Some participants noted that the process deals with how to apply herbicides; users have to be licensed; and MOE is involved in some

way. Most did not know the specifics of the process. One participant noted that the applicators license cannot be renewed without re-testing.

- In Carleton Place, most participants in the "professionals" focus group said they had limited familiarity with the regulatory process. Some expressed concerns which are noted below in the section regarding the regulatory process.

v. Expressed Concerns about Herbicide Use in Forest Regeneration

- Most participants in the "interested public" focus groups had concerns about the use of herbicides in forest regeneration (O).
- *One participant in the Thunder Bay "organized public" focus group stated that he is a member of the 15,000 member Canadian Pulp and Paper Workers Union which formally stated it was against the use of herbicides in forestry.*
- Some participants in the North Bay "professionals" focus group had concerns about herbicide use in forest regeneration. In Carleton Place, the group was almost evenly divided between foresters and biologists. The foresters did not have concerns about herbicide use but the biologists did.

(1) Concerns about clearcutting/forest management practices

- dislike clearcutting - participants expressed that they believed clearcutting leads to monocultures and the need for herbicide use in forest regeneration - some expressed that clearcutting and monocultures are the major problem *** -encouraged OMNR to change to block and strip cuts to get natural regeneration**
- some participants emphasized the need for industry to adopt sustainable forestry practices (O)- *industry is after a better return on investment, too much of a hurry to regenerate - should allow for natural regeneration)*
- *herbicide use in forest regeneration is needed not only because it is the most cost effective means or regenerating forests but also because forest industry has not been replanting what they cut at the rates which they should/managing forests well in the past**. Therefore, there is pressure to grow what is replanted at a faster rate than we could without herbicides.*
- *there has been an increase in herbicide use because we haven't been managing our forests well; e.g., spruce to poplar - we have to get on the sites sooner and get the planting done sooner in order to limit the problems - the public will object to herbicide use when they are not confident that the management practices are effective to start with and OMNR is treating the symptom not the problem - if forest management practices were healthy to start with, there would be less need for herbicides.*

- *for a while there was a negative cycle - herbicides were overused**and other tools were underused - commercial planters were not doing a good job - this lead to the need to use more herbicides*
- *herbicide use is a bi-product of failing to teach people how to grow healthy plants*
- **public thinks that herbicides are not necessary and people do not trust OMNR's reasons for using them**

(2) Concern about participant's own lack of information about herbicide use in forest regeneration

- *what chemicals are used and how much?*
- *want to know more about the technical aspects of spraying; e.g., when, where, how (O) — "we know about textbook forestry but not about local activities"*

(3) Concern for other forest values

- *today people place other values on the forest, not only pulp and paper and wood - perhaps wood products should come from designated areas which are plantations similar to agriculture perhaps herbicide use could be vastly limited through this practice*

(4) Concern for biodiversity

- *biodiversity - UN goal is 12% - OMNR goal of 8% is not high enough*
- *dislike monoculture - prefer diversity which protects against loss of forests to pests*
- *"a word of caution" - over management could lead to lack of diversity of species and monocultures - a problem Sweden is currently facing*
- *strong support for replenishing the forests - but not for single species and single use - regenerate differently than in the past*
- *herbicide use adversely affects biodiversity — want to maintain the gene pool*

(5) Concern about safety of herbicide/chemical use and potential negative effects on ecosystem

- *uncomfortable putting "poisons" into the ecosystem - skeptical about the safety of herbicides and their fate in the environment - against any dosage which has more than a two month residue or which contaminates deeper than one foot — we do not know how chemicals interact in the environment - **public has a negative attitude about herbicides - public can't separate chemicals from herbicides***
- *worried about the contamination of water (P) - concerns about impact of "carriers"/herbicides on water***

- worried about hazard to human health; e.g., in eating blueberries from areas which have been sprayed - **public gets a mixed message - herbicides are safe, yet we post notices of spraying in berry picking areas - became sick after eating berries in an area which had been sprayed - herbicides that were promoted as safe when first came out were later found to be unsafe - public is unsure of what harm herbicides will do - they are worried about public health - concern that ground spraying, which has less controls, can cause as much drift as aerial spraying**
- concerned about the long-term (P**) and/or cumulative effects of herbicides; e.g., herbicides are the #1 pollutant in ground water in southern Ontario - do they last a hundred years? - do they travel up the food chain? - *the lack of knowledge of the long-term impacts was a concern to everyone in the North Bay "organized public" focus group; one participant in North Bay wanted to have much more detailed information about the chemical, the benefits and disadvantages to its use in order to gain confidence in the people making the decisions about herbicide use - another participant in North Bay was interested in a cost/benefit analysis of herbicides and alternatives in light of competitive market prices - in the past, looked only at lethal effects [of herbicide use] - e.g., the killing of fish immediately - need to look at the long-term effects which may not be able to be measured - biologists would like to see the research which says that the current herbicides are safe - statements that chemicals are safe are based upon the best available information - but we are learning more: "It is an arrogant statement to say that anything is safe." - there may be the potential of different chemicals interacting*
- concerned about safety for animals such as own goats grazing on vegetation that has been sprayed - *against herbicide use if we do not understand the dangers to plant and animal life - herbicides adversely affect wildlife - concern re use on non target organisms; e.g., long-term or chronic effects for wildlife*
- concerned about the dioxins, degradation of chemicals, safety of "breakdown products" of herbicides - some participants believe that chemical companies have manipulated us to believe herbicides are degraded
- concerned because the attempts to change nature have other repercussions to the ecosystems; e.g., insects, fungus, birds, water, some of which may be hard-to-measure, adverse effects - *herbicides lead to loss of the integrity of the micro environment - prefer natural regeneration as a means to eventually get conifers*
- concerned because of negative impacts of herbicide use by other agencies such as road crews - concerned that all public agencies who are using herbicides to manage vegetation are not working together to share research and other insights regarding safety and alternatives to herbicide use in vegetation management
- uneasy about the OMNR Charlie Farqueson "propaganda" video** (in contrast, one participant in Thunder Bay group liked the Farqueson video) -- *uneasy when OMNR staff and other agency staff have differences of opinion about herbicide use***

(6) Concerns about the effectiveness of the herbicide regulatory process

- some participants are skeptical about the ability of a regulatory process to adequately protect human safety (P) - *concerned about a regulatory process which allows the public to purchase herbicides without licensing; which doesn't guard against licensed applicators in urban settings who ignore guidelines; e.g., wind speed, clothing; which insists on only a few precautions against such things as accidental spills; which allows a fair degree of latitude in use of herbicides to jurisdictions using them*
- concerns about effectiveness of supervision of those applying herbicides (O) - perhaps products are being regulated but people who apply it are not controlled tightly enough - don't hear very much about the work of regulating bodies to scrutinize the people who apply herbicides (P**) - concerned that herbicide users would not be very safety conscious in vast areas of northern Ontario which are out of the public view - concerned that if farmers can get access to herbicides so readily without proper regulation, then the regulatory process must be very lax — "if things are so well regulated, why is the environment so polluted? - *acceptable to the public if there is wise use - however, public doesn't believe there is wise use* - **herbicides have been misused for many years by OMNR both in the type of herbicide used and in the way it was applied - no controls or checks for how applied, except for aerial spraying - concern over the use of pesticides in the private sector - but used safely by OMNR**
- concerns about the product registration process - because the product testing is expensive, there may not be enough testing for long term effects - long term effects are not known before the product is used for a while (O) - the chemical company tests the products - are they biased?(O) little independent research is done - some participants want a longer testing period/high burden of proof (O)- *all participants in Thunder Bay were concerned about the fact that chemical companies are responsible for providing research for product registration requirements and that companies do not have to list "inerts" and "carriers".*
- *most participants in the North York focus group believed that home owner and agricultural use of herbicides were a greater problem than herbicide use in forestry because these uses were less tightly regulated - however, herbicide use in forestry was still a concern*
- **concern that registered herbicides are presented as being safe, but the things they kill are not publicized**

(7) Concerns about the criteria for decision making about herbicide use in forest regeneration

- concerned that herbicide use in forest regeneration is approved on an economic criteria not environmental criteria - want an environmental criteria built into the decision making equation - economics alone cannot dictate - need to consider costs of potential negative impacts on humanity and the biosphere - concerned

that OMNR is looking for a cheaper means of forest management in herbicides due to economic cutbacks

(8) Concern that the general public is using herbicides and doesn't care about the potential negative environmental impacts

- concerned that the general public was not worried about polluting the water and ecosystem through their use of chemicals on lawns
- the public buys Killex and doesn't even read the label - the public is resigned to this type of thing - they indulge in things that are bad for them everyday
- **herbicides are misused by public; i.e., used without protective equipment**

(9) Concern that forestry has become a political issue

- *the bureaucracy gets in the way of effective forest management practices - e.g., the money may be in the budget in January but there is little that can be done at that time of the year in forestry*

(10) Concern that society must move more aggressively toward the three R's

- *reduce use of paper*
- *alternatives to wood products*
- *greater use of "weed trees"*
- *make recycled paper cheaper and more accessible*

(11) Concern that public is poorly informed

- **public is poorly informed of what is needed to achieve their wants and demands - public wants pine in Ontario landscape**
- **public is negative to spraying because of lack of education - they do not know what a chemical does - do not like it close to where they live or play**
- **one participant in the "professionals" focus group said it was important to make the public aware of the amount of herbicide used on public's lawns and agriculture as compared to the amounts used in forestry or toxicity of household cleaning products compared to herbicides in forestry** - another said however, that we should not justify one wrong with another****
- **public are very distrustful and poorly informed - informing people does help**

vi. Supportive Comments about Herbicide Use in Forest Regeneration

- Approximately one to three people in each group of about 10 members of the "interested public" were supportive of/prepared to accept the use of herbicides in forest regeneration with the condition that herbicide use was carefully controlled and used when necessary, for example to save the forest. These participants

tended to be people with work or private involvement with herbicides in regeneration (e.g., worked for Hydro, worked in a private nursery, owned a private woodlot).

- Similarly, approximately two members of each of the "organized public" focus groups were supportive of/prepared to accept the use of herbicides in forest regeneration. Again these participants tended to have work responsibilities/educational backgrounds associated with the use of herbicides (e.g. worked for Parks Department, MOE, Forestry graduate)
- The following are examples of comments made by individual participants in some of the focus groups.
 - "As a result of Temagami, OMNR has improved their regeneration methods, survey methods; clearcuts are smaller."
 - "Seems to be a good shift in forest management."
 - OMNR has public good in mind - OMNR knows what they are doing
 - integrated resource management should work better
 - "media is often negative whereas foresters will show you the other side of the coin - a lot of bad press about spraying makes it hard to know what to believe."
 - "Canada is struggling with it [the regulation process]. It is becoming more stringent."
 - One participant acknowledged that there are different competing interests for the forests and that we need to accommodate all those demands.
 - *One participant agreed that block and strip cutting was preferable to clear cutting; however, he noted that a larger road system would be needed to make this feasible in northern Ontario*
 - *Another participant expressed his view that there is a place for herbicides in forest regeneration if properly applied -- his view is that what is needed is a good method of advising the public and users about herbicides*
 - *"the public have been told they don't understand chemicals. What they don't understand they fear. The schools have an important role to play in demystifying chemicals like herbicides."*
 - *the public needs to know that herbicide use in forest regeneration is carefully regulated and supervised and staff applying herbicides are well trained*
 - *Ministry of Environment is not going to ban the use of herbicides; herbicides must be applied with professionalism, in minimal amounts, using methods that produce the maximum effectiveness, used as a last resort*
 - *have to rebuild the public trust that has been lost due to the inappropriate use of herbicides in the past*

- *need education to accept alternatives and a bit less perfection - herbicides have the best results with the lowest costs*
- *one participant stated that herbicide use in forestry has a negative connotation - however, herbicides are one necessary tool in forest regeneration - should be responsibly used and used only when needed - public needs to be educated about the responsible use of herbicides in forest regeneration*
- *one participant in North Bay noted that the OMNR SSM was excellent but there should be mandatory training for foresters in forest industry on herbicide use*
- **controlled use of any chemical is okay but abuse is wrong**
- **the chemicals which are being used are restricted**
- **the movement now is to use herbicides with no residual effects - chemicals such as Vision are different from others; it breaks down quickly**

B. Alternatives to Herbicides and Conditions Under Which Herbicide Use is Acceptable in Forest Regeneration

i. Alternatives to herbicide use in forest regeneration

- All participants in the Lindsay "interested public" focus group preferred other alternatives over use of herbicides in forest regeneration. Most members of the Thunder Bay "interested public" were willing to accept limited use of herbicides despite their discomfort with herbicides so long as other alternatives are researched and used where possible.
- Some participants in the focus groups made the following suggestions about alternatives they thought were favourable in forest regeneration:

(1) Natural alternatives/non chemical alternatives such as:

- creating different strains of seedlings which dominate over competing vegetation
- using better/larger planting stock in competitive sites*** (O) - need to research new kinds of seedlings/stock types - understand biological processes/natural system better (O) - *do more geographical planning for reforestation* (O**) - use better planting techniques - plant hardier species, more seedlings, better seedlings
- use better cutting/harvesting techniques (O***) - more research on better harvesting - *better silvicultural solutions - how you cut; why you cut; where you cut do not favour clearcutting* (O), therefore against herbicides - *leave biomass in bush after cutting - have to put nutrients back into environment- smaller clear cuts, alternatives to clear cuts, and less reliance on herbicides* - manual releasing will work and provide employment(O***) (P) (another participant in one group stated manual tending is impractical over the size of area in northern Ontario) - **manual**

cutting is four times the cost of herbicide use, but that may not be unreasonable

- natural forest fires vs. cutovers (cutovers lead to desert, bare dirt) (O)
- impressed with scarification - develop better scarification methods to prevent grass and raspberry competition
- no sense controlling poplar - find better ways to utilize it - but question still remains to be answered, should we convert to deciduous which may be difficult to grow on sandy (northern Ontario?) soils?
- use biological methods** (O) [needs more research (O**)] and natural substances
- explore other ground covers/mulches (O**) (P)-- *like clover - mulch mats - bark residues*
- mechanical methods
- barrels and chains, etc.
- *no background, but instinctively prefer natural methods (O**) because they are better for the environment*
- all but one of the Thunder Bay "organized public" focus group members favoured natural methods and did not support research into herbicides or herbicide application methods
- prescribed burns (O) (P) - *may be effective since fire staff are already in place - however, one member of the Thunder Bay "organized public" focus group suspected that the cost of prescribed burns was very high due to tight controls - seems to have the most potential, especially for natural regeneration*
- **sheep** - but concerned about predators and removing nutrients from the ecosystem**
- **accept natural processes more**

(2) Forests for other values

- at present, forests are for paper products - "instead put more effort into recycling so we don't have to use so many trees" - use less forest products****(O***)
- allow natural regeneration** (O****) - rather than planting - would prefer not to see pine and spruce grown on land poisoned by herbicides - *planned natural regeneration from cutting through whole cycle - work with nature - don't control it -- regenerate differently than at present*
- employment opportunities(O****) (P) - chemicals get trees to grow faster but more staff doing better forest management [professional and manual tending staff (O), *better qualified/trained tree planters and brushers*] could lead to less risk of environmental damage from chemicals (herbicides) - environmental damage from chemical use has costs, too-- **although alternatives other than herbicides would be more costly, these would put the money in the local economy rather than in the herbicide companies**
- more land will be set aside for endangered spaces and less for growing trees - if there is an increasing demand for forest products this may mean more intensive production of forest products in smaller areas
- *emphasize integrated resource management*

- *need a blue print for all our public lands which includes endangered spaces that are large enough - we don't know how big is big enough*
- **biologists in Carleton Place would like to see changes in the way OMNR manages forests to result in a reduction of monocultures and greater biodiversity - they believe that herbicides contribute to decreased biodiversity - however, foresters in Carleton Place stated that allowing poplar to take over did not lead to greater biodiversity and that studies show that herbicides don't reduce biodiversity**

(3) Better forest management

- Poor forest management and big cuts in the past have made herbicides a necessity now - manage forests better to avoid the need for remedial measures using herbicides
- Forests should be treated as a managed resource.
- Adopt a longer term view (O) - avoid the "quick fix" mentality for our forests - adopt practices which future generations will see the benefits of
- there should be a focus on the "cure" (better forest management) rather than the "treatment" (herbicides)
- need a better look at how to use sites more effectively
- *need to get off dependency on chemicals in order to maintain productivity; e.g., government to "lockstep" the entire industry so different companies don't have to compete with one another*
- *there should be monitoring, including monitoring of VMAP; but must consider monitoring things which are not currently monitored*
- *for many years OMNR was industry with government hat on, volume-oriented, wood exploitation - OMNR must listen to people and prove themselves in forest management - if OMNR mandate continues to stress wood production for industry, OMNR will not gain the trust of the public*
- **Two OMNR staff suggested looking at regeneration as a longer term project by timing the cutting, developing the right combination of topography, soil and species to get the best results in five years - then do right site preparation, tree planting, effective juvenile tending to get a cost effective result in five years - the emphasis should be thorough planning on the ground.**
- **One OMNR staff suggested establishing contracts with the forest industry which have volume basis thereby increasing the wood and bi-products expected when allowed to cut (minimize waste) - e.g., allow others to cut poplar that the industry has left behind; or expect forest companies to cut poplar when they harvest spruce to sell to other companies; or some other fully integrated solution to make future silviculture operations easier and more effective**
- **pre-harvest planning is important - pre-harvest girdling is an option**
- **Forest Ecosystem Classification will help with site specific prescriptions - it will be a diagnostic tool for deciding what will and won't work based on certain criteria**

(4) Change the economic basis of our society

- "forestry and capitalism are not very well matched" - the benefits of forest regeneration to society are not matched by benefits to forest companies - IVM implies that growth is valued - however, growth as a basis of our society is disastrous to the natural environment
- *need to cut down on demand for everything; e.g., timber*

(5) Other alternatives

- set aside areas which are for herbicide use - others which are not
 - may need more intensive forest growth in smaller areas
 - *prefer alternative that is tested and has had a cost/benefit analysis done on it*
 - *proceed with caution - look at and test all alternatives*
 - *stump applicator is a good idea*
 - **stump injection has limited use, applicable for larger material - this larger material could be salvaged or used because there is a market for it**
 - *one participant in Thunder Bay "organized public" was supportive of more research into new herbicide products and methods of application; however this comment was rejected by all other members of the group who felt chemicals are not natural and there are too many unknowns associated with use*
 - **An OMNR staff stated that money in Operations should be for tools which are known to work rather than experimenting with tools that staff know won't work - Operations mandate is still to grow within a given timeframe**
- Some participants in the focus groups raised questions and made the following comments during the discussion about alternatives to and conditions under which herbicide use is acceptable in forest regeneration:
 - How much spraying is being done? - put map in newspaper showing the area of Ontario, or local area being sprayed
 - Why do we need to damage the forest? - consider this question before considering alternative approaches to vegetation management
 - Does manual labour result in an extra cost compared to herbicides? - who bears this cost?
 - What are the long-term effects of chemicals (herbicides)? ****(O)**
History shows that every time we find and use a chemical, we end up finding out that it is bad and taking off the market; e.g., DDT - suspicious of herbicides
 - What does aerial spraying or overspraying do to songbirds?
 - Spraying should not be allowed in berry picking areas and moose habitats
 - What is the Minister's objective?
 - No aerial spraying

- **Aerial spraying is more stringently controlled, more evenly and more professionally applied than ground applications - there is more worker exposure in ground applications**
- Need to spray grassy areas
- Need more tools (P)
- Total ban is not feasible
- "no matter what we do, we should do the best"
- "I don't have the answer to economic problem of reducing herbicide use."
- Although the likelihood of being exposed to herbicides used in forests is low, still have the concerns about whether herbicides biodegrade or accumulate in plants
- Need more research on what difference herbicides make in long-term growth and yield
- Limit use to bare minimum - should we try to change forest back into what it was or what it will change to?
- *Don't know how the economics would really work out - need to learn more about the forest industry*
- *"Forestry is out of hand. OMNR cuts large stands; there is a time lag before planting; some sites are planted while most are left to themselves"*
- *Stay away from herbicides - long-term effects are still unknown -- cumulative effects of all uses of herbicides create pressure on the natural system*
- *Three of four members of the Toronto "organized public" focus groups were totally opposed to herbicide use. One member of the group who had a forestry degree said there were some limited circumstances where there are no alternatives.*
- *All members of the Toronto "organized public" focus group were familiar with IVM and agreed with it*
- *supportive of IVM approach and need for sharing ideas across agencies using herbicides*
- **in the real world, there is not and will not be funding adequate for alternatives to herbicides - alternatives that will be funded will be based more upon politics than biology**
- **politics and bureaucracy hamper flexibility in silviculture; e.g., no money in the budget at the time of year when foresters could intervene to do such things as eliminate competition by cutting poplar when leaves are out**
- **In Carleton Place, biologists were concerned about the monocultures that result from Ontario forest management practices - they believe that herbicides reduce biodiversity**
- **"We still have the concept of weed species," and we shouldn't**
- **alternatives work better on a smaller scale**
- **concerned about biological controls - playing with fire**
- **there is not enough research on the alternatives**

ii. Conditions Under Which Herbicide Use is Acceptable, if any

- Individual participants in the focus groups stated the following conditions for herbicide use:
 - Don't like spraying - want it to stop ****- therefore, (OMNR) would have to show me that herbicides are the only way to manage a site and they are safe -- proven facts.
 - Public needs to be informed about spraying**(O) - *make own decision -- with education through local Timber Management Plan citizens committee, now see that herbicides have some value* - what herbicides are being used, where, what is in the areas of proposed use - if you have to use it balance the risks.
 - Should investigate alternatives first** (O) - if they need to be used, its okay (O)
 - if OMNR, environmental groups and forest industry agree that herbicides have little effect on the environment, then it is okay to use herbicides - trees are part of the environment
 - selective application despite higher costs with this approach**
 - ground application is okay
 - continue use along with research into alternatives and an outcome of a total ban
 - use herbicides where there is no other economically feasible alternative
 - use herbicides when there is a good reason for natural or artificial regeneration; e.g., wildlife habitat
 - *because we have a backlog and already have clear cuts (don't favour clear cuts), herbicides are okay and needed but must be regulated, people applying herbicides must be licensed and correct use must be enforced*
 - *no problem with herbicide spraying if it is done properly and all factors are taken into account*
 - *minimal use if we had stricter regulations, more knowledge of herbicides*
 - *conditions for herbicide use are minimal amounts used, smaller areas treated*
 - *could be convinced that herbicides should be used because by cutting trees you create an unnatural situation*
 - *all but two participants in the Thunder Bay "organized public" focus group felt that herbicides should not be used because herbicides:*
 - *disturb the natural ecological balance*
 - *herbicides are dangerous not cost effective*
 - *are a "fix" for poor forest management*
 - *contribute to an endless "vicious cycle"*
 - *contaminate vegetation that large game feed upon, thereby contaminating moose and bear - contamination of large game is detrimental to the tourism industry in northern Ontario*

- *two participants in the Thunder Bay "organized public" focus group suggested the following conditions under which herbicide use was acceptable:*
 - *not on public lands, however, we cannot control what is used on private land beyond the regulatory process*
 - *if research can prove that herbicides don't hurt the environment*
 - *if herbicides are more economical than such things as prescribed burns*
- **biologist advocated for minimal use of herbicides and, in Carleton Place, suggested a phased ban in 30 years from now - alternatives won't come along if we don't get away from the thinking that the current practice is the only way to do it. If Sweden can do it, why can't we adopt different practices**
- **In Carleton place, all foresters had fewer conditions under which herbicide use was acceptable than the OMNR biologists; however, in North Bay, there were varying views about the conditions under which herbicide use was acceptable among OMNR professionals in the group**

C. Ideas about Public Interaction with OMNR on the Subject of Vegetation Management in Forest Regeneration

i. Credibility with the Public

- Most participants expressed some skepticism about the credibility of most of the key parties involved in vegetation management for forest regeneration****.
- Lindsay participants were unique in that several participants put the staff of the district office of OMNR at the top of the list for credibility - many had worked with OMNR in the past and felt very comfortable with the staff and the office. This was in contrast to participants in Thunder Bay, some of whom indicated that the district/regional office of OMNR had lost credibility with the public over the past few years. *Also, in Thunder Bay, most participants felt there were degrees of credibility, chemical companies are least credible, OMNR is more credible than chemical companies, professors are more credible than OMNR, environmentalists, hunters and anglers are most credible.*
- **In Carleton Place, OMNR biologists look at all sides of the situation including what the different stakeholders have to say.**
- Some examples of credibility problems which were noted by individual participants were:

- *university professors credibility is low ** because they are "up in the clouds" - depends where they get their grants (O) - however, in Lindsay, university professors and scientists who had written and presented their research to peers were seen as experts to some participants but not to others who were concerned about the expert's connection to a special interest*
 - *university forestry departments are seen as being too closely aligned with the industry; e.g., senior professors at Guelph work for chemical companies, come from "old school" herbicides are the way to go, not tuned into new approach*
 - *government publications with statement such as "practically non-toxic, etc.,"*
 - *not scientists - depends who is funding their work*
 - *research - don't trust anyone's studies without reviewing them** - wouldn't trust VMAP - concern that the wrong questions are being asked, lots of biases, research directed at making pesticides look good; e.g., OPAC*
 - *bureaucrats** and top corporate managers - have ignored the evidence and should be exposed - major distrust*
 - *regulatory process - no faith in the regulatory process because the research is done by the applicants and only 3 people at the federal government review applications*
 - *OMNR has lost credibility because it has in the past failed to use input after saying they will - and because mandate has been to produce wood for industry*
 - *OMNR must prove themselves in forest management -- moving in the right direction but not fast enough*
 - *nobody is credible (O) -- except possibly environmental groups - shouldn't blindly trust any institution - no research is perfect*
 - *industry is not credible with the public*
 - *government credibility is mixed:*
 - *a few professionals felt that government agencies, labs, testing are the most credible but others disagree - "Government publications don't present the whole truth, they say what they want to say" - others felt they would scrutinize what government says; e.g., VMAP publications*
- The participants offered the following suggestions to OMNR and other key parties for building credibility with the public:
 - keep in mind that participants feel they have been burned before regarding what they have been told about pesticides and other chemicals, when they later heard of the dangers of these products - they are now "gunshy"

- provide information on both sides of the argument in the most accessible, less technical, form possible to the public**** (O**) (P) - the public is interested in education, research, public relations - **like Ontario Hydro** - rather than "selling" (O) - many, most won't care** - the public is interested in what the future of spraying is in Ontario, what the forest management practices are, what the alternatives to herbicides are (O).
- **take more precautions**
- **compromise**
- organizations such as fish and game clubs, field naturalists/FON (P) and other people in the public have credibility - participants in the "interested public" focus group in Thunder Bay who were teachers expressed that OMNR has credibility - **news local and Ontario has credibility with the public**
- independent research is credible especially if written in a form that is brief and readable ** (O) with reference to where to get original or more detailed version - encourage independent groups to publish research findings in a form that is accessible but not published by OMNR - *state the author's "agenda" upfront***
- inform people about the regulation process - public is concerned because experts can't agree
- *provide public forums which present many sides of the argument and are not biased in one direction*
- *OMNR could gain credibility by:*
 - *playing a leadership role in bringing together IVM parties to share research and approaches*
 - *encouraging public to be more environmentally conscious - recycle, reduce, etc.*
 - *be honest; show people you know ecology, debate issues*
- don't expect them to accept the conclusions of anyone else - it may be cumbersome for public to educate themselves but it is possible for those who want to educate themselves to make their own informed decisions about vegetation management in forest regeneration
- "principles can be explained to the layperson...if presented simply and clearly."
- need a public watchdog to gain credibility -- *public doesn't trust government or forest industry; it only trusts environmental groups*
- organizations which are arm's length from government are more credible; e.g., CSA
- *for research - form a tripartite body (government, industry, environmental groups) to jointly review and approve research proposals, to decide which questions should be asked. "The research may not be better than at present, but will be more credible." - include resource managers in setting research agenda*
- *involve environmental groups, hunters and anglers - organized public*
- *use anecdotal information - it is seen as a valid source of information*

ii. Approaches to Public Involvement

- Participants offered the following suggestions to OMNR regarding approaches to public involvement:
 - OMNR should cultivate public interaction(O) - *at first it will require a lot of interaction but eventually trust will build*
 - start by providing the public with more information in a language which laypeople can understand (O) (P) - *in Thunder Bay, participants were most interested in written materials, through newsletter like Green Report and free press -- provide public with real opportunity to be involved in decision-making regarding what should be done in the forest (O) (P)-*
 - avoid token public involvement - **caution around special interest group domination** -- but community can scrutinize OMNR decisions through a community advisory board** (O) (P)
 - some participants would be interested in being involved regarding future use of herbicides
 - participation should be on-going or on a continuing basis
 - give contrasting opinions and let them make up their minds
 - good idea to bring together people with competing views in multistakeholder approach*** (O) (P); but people should be involved before the situation is a fait accompli
 - educate children along the lines of Focus on Forests - get children to do hand pulling
 - *environmental groups expressed interest in involvement with government and industry ** to:*
 - *"look for joint solutions"*
 - *bring all sides to the table*
 - *build relationships with foresters who are interested in seeing change*
 - *involve environmental groups in VMAP research program **- get stakeholders access to research - give public more leadership roles*
 - *communications should be two-way - OMNR has made some change in attitude about this*
 - *show groups "what is in it for them" - why they can benefit from their involvement*
 - *provide longer time lines for volunteer groups to respond*
 - *make it as easy as possible for individuals and groups to provide input; e.g., rather than requiring a formal brief, provide a 1-800 number -- or look into Webb, a computer network operated by NIRV (401 Richmond Street, Toronto, \$25/year)*
 - *one participant noted the process used by the Sewell Commission as a good model for soliciting public input*
 - provide feedback to the participating public to illustrate how OMNR has listened to and used the participating public's input (O***)- *a couple of*

participants did not feel that OMNR listened very well at a meeting regarding the Forest Policy Panel in Kemptville - OMNR may have listened but, if they did, the participants did not get any feedback after the meeting to indicate this was the case

- *consultation processes should be open, transparent with a different array of public input methods*
- *schedule meetings evenings and weekends rather than during the day when people are working*
- *don't expect people to travel long distances (e.g., Toronto-based groups are asked regularly to participate in hearings in Thunder Bay)*
- *provide some kind of funding***, even if it's just to pay travel costs for volunteers to go to a meeting - this would show that participation is recognized - environmental group people participate a lot at their own expense in meeting with paid government and industry people - consider honoraria or intervenor funding; core funding was also suggested*
- *environmental group participants noted that if herbicide use was restricted to "near zero". there would not be a need for discussion*
- **let people know ahead of time**
- **"people want to have control over their environment - most do not oppose herbicides - but they want to know what is involved (O)**
- **discussion with public about what is to be done usually ends up in agreement - however, if landowners are opposed to spraying, it isn't imposed upon them even though the contract states spraying could be done if landowner isn't maintaining trees properly**
- **public has to be involved - moot point whether we want it or not**
- **go to where the public (and environmental group) is (O) - isn't enough to invite them in**
- **there is "a big role for professional foresters to interact with the public" - in plain English**
- **intervene at the schools - more emphasis on this level (O)**
- **rather than telling the public, professionals should have the attitude that we can learn from outside groups**
- **need to have/show a personal commitment to being involved with the public**
- **for public awareness, use local news releases* (O**) (P), brochures, videos, displays in forests (demonstration sites), field tours, photo displays showing rotation, tours of forestry stations (O) - this helps reach a small number of people**
- **try coverage in magazines such as Harrowsmith, Organic Gardening**
- **use TV (O) (P) - e.g., TVO or by producing shorts which could be aired as commercials and/or before programs - info through schools**
- **use simple language (O) - non technical**
- **venues for information include:**
 - *Ontario Parks Association*
 - *OMNR publications*

- *local university professors*
- *bibliography*
- *public consultations*
- *public meetings in a minimal way*
- **resource/literature list**
- go where the people are (O) and form a relationship (P)- malls, community events, community centres, day-care centres, youth and seniors clubs, schools (O**), university education weeks, *conferences*, - maintain an open door policy
- listen well first (O) - then have information on hand to help, provide advice if asked and only if you know; if you don't know say so since this instills credibility - *do not hide negative information*
- open the doors at OMNR workshops and conferences even on a user pay basis - breaks down the "we-they" feeling
- *provide youth with more opportunities for involvement*
- *make presentations to municipalities - media often broadcasts these*
- *provide a phone number for people to call*
- *keep in mind that modern life is very stressful; some people are afraid to go out at night; there is much negativism about the environment that people are tuning out*
- **OMNR should band together with the forest industry to present a united approach to public**

iii. Other Comments/Advice to OMNR

- Some participants offered the following other comments:
 - is this a public relations exercise to justify continued use of herbicides? - *two participants at Carleton Place expressed strong cynicism about government policy and this process - would have liked to have something about VMAP before meeting - something specific to react to - having the director of VMAP present - another participant expressed very positive feelings about this consultation process and views it as a step in the right direction*
 - *suggestion that VMAP consult with native communities*
 - *forestry industry in Canada will be in a bind for 30 years due to past lack of regeneration - this is the pressure for use of herbicides*
 - *need full cost accounting of forest industry, showing various subsidies*
 - one participant supportive of VMAP based upon what he knows of it (O) - *as long as search for alternatives is sincere - liked this consultative process***
 - general interest in learning about VMAP**, its objectives, the actual changes occurring in the field as a result of VMAP - current use of herbicides

- *look overseas to see how it is done*
- *if we don't change out practices, we may cut ourselves off from other markets; e.g., the European Community*
- *need information on impact of Glyphosate on aquatic life and water safety*
need research on reducing dependence on herbicides rather than on documenting safety
- *public opinion against herbicides is very strong*
- **foresters lack time to interact with public but can't afford not to do it**
- **foresters lack training on public interaction - some not comfortable talking to large groups - train them to respond with confidence to the public's questions**
- *older foresters need a refresher*
- *forest industry needs information and training on regulation process*
- *change OMNR funding of certain activities but make funding more site specific rather than general activities*
- **One OMNR technician stated he preferred to leave the public in the dark because when resources are tight, interaction takes him away from work in the field - when public is hurt financially or in standard of living (lack of paper or wood), public will be more open minded about herbicide use**

iv. Risk Perception

- Participants made the following comments:
 - *disagree with those who say that herbicides are not harmful** - "arrogant" to say that there are no risks*
 - *looking at short- term impact only*
 - *only looking at a limited number of potential impacts***
 - *looked at too narrowly - should look at pollution of water, hazardous waste in production of chemicals, overall toxic load in the environment (P)*
 - *inert substances - for example about 60% of Roundup - can have major impacts (scientific article cited)*
 - *questions that burden of proof should be up to environmental groups to prove they are dangerous*
 - *can't prove anything in science; science can't give answers, can't give proof*
 - *acknowledgement that less of a risk than in agriculture or urban use but still a problem*

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